

**YAMAHA**  
**PROFESSIONAL**  
**EQUIPMENT**



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## SIGNAL PROCESSORS (P.43 ~ P.53)

GRAPHIC EQUALIZERS	Q2031A/Q1027/GQ1031BII
2-CHANNEL COMPRESSOR/LIMITER	GC2020BII
FREQUENCY DIVIDING NETWORKS	F1030/F1040
DIGITAL REVERBERATOR	REV5
DIGITAL EQUALIZER	DEQ7



## MIXERS (P.6 ~ P.42)

### MIXING CONSOLES

PM Series **PM3000/PM2800M/PM1800**

MC Series **MC2404/1604/1204**

**MC1602/1202/802**

MC MONITOR Series **MC2408M/1608M**

MR Series **MR1642/1242/842**

### DIGITAL MIXING PROCESSORS

**DMP7/DMP7D/DMP11**

Digital Products **IFU1/IFU2/IFU3/IFU4**  
**AD808/DA202/FMC1**

### RECORDING MIXERS

**RM2408/1608**

### RACK MOUNT MIXERS

**MV422/MV802**

### MIXER/PORTABLE KEYBOARD MIXERS

**MJ100/KM802/KM602**

### POWERED MIXERS

**EM1800/1600/1400**  
**EMX2300/2200/2150**

MIC LINE AMPLIFIER **MLA7**

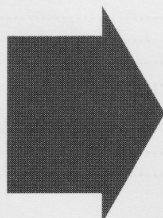
## PROFESSIONAL MICROPHONES

(P.6 ~ P.7)

MZ Series

**MZ205Be/MZ204/**  
**MZ102Be/MZ103Be/**  
**MZ105Be/MZ203Be/**  
**MZ101/MZ104/MZ106S**

## MUSICAL INSTRUMENT





REVERB PROCESSOR  
DIGITAL MULTI EFFECTOR  
PROFESSIONAL MULTI-EFFECT PROCESSOR  
PROFESSIONAL MULTI-EFFECT PROCESSOR  
DIGITAL SOUND PROCESSOR

R100  
REX50  
SPX1000  
SPX900  
SPX50D

## POWER AMPLIFIERS

(P.54 ~ P.61)

*POWER AMPLIFIERS*

P2250/P1250/P2150/P1150/P2075

*COMMERCIAL POWER AMPLIFIERS*

P2250C/P1250C/P2150C/  
P1150C/P2075C

*PRO-AMPLIFIERS*

PC2602/2602M/1602/PD2500/P2040

## SPEAKER SYSTEMS

(P.65 ~ P.74)

NS10MC/NS10M STUDIO

NS40M STUDIO/S50X

S10X/S20X/S300

S250B/S250X

S4115HII/S2115HII/S500

MS202/MS101

*THE "CLUB" SERIES LOUDSPEAKERS*

S315ES/S215ES/S212ES/SM12ES

*HEADPHONES*

MH100/RH5M/RH10M/RH40M

## RECORDING EQUIPMENT

(P.62 ~ P.64)

MT100/MT2X



# MZ205<sub>Be</sub>/MZ204/MZ102<sub>Be</sub>/ MZ103<sub>Be</sub>/MZ105<sub>Be</sub>MZ203<sub>Be</sub>/ MZ101/MZ104/MZ106S

## PROFESSIONAL MICROPHONES



- *World's first triple-laminated pure beryllium diaphragms in -Be models for unprecedented reproduction precision.*
- *Advanced Yamaha acoustic damping system incorporating original photo-silkscreen technology for improved overall frequency response and absolute response uniformity among units.*
- *Three-point floating suspension system to minimize handling noise.*
- *Rugged, extra durable windscreens using newly-developed mesh wire.*
- *Gold-plated professional 3-pin locking output connectors.*

### FEATURES

#### MZ205Be

- Specifically designed for pickup of higher-pitched drums, such as snares and tom-toms smaller than 14".
- Unique and compact with side-mounted connector design for ease of placement in confined areas and over a wide range of angles.
- Triple-laminated pure beryllium diaphragm.
- Precision photo-silkscreen process acoustic damping system.
- Three-point floating suspension system.
- Extra-durable wire mesh windscreen.
- Professional XLR connector.
- Metallic dark gray finish.

#### MZ204

- Deep, powerful response tailored especially for floor tom and bass drum pickup.
- Unique and compact with side-mounted connector design for ease of placement in confined areas and over a wide range of angles.
- Double-laminated polyester film diaphragm.
- Precision photo-silkscreen process acoustic damping system.
- Three-point floating suspension system.
- Extra-durable wire mesh windscreen.
- Professional XLR connector.
- Metallic dark gray finish.

#### MZ102Be

- Response ideally tailored for smooth, clear vocal reproduction.
- Triple-laminated pure beryllium diaphragm.
- Precision photo-silkscreen process acoustic damping system.
- Three-point floating suspension system.
- Extra-durable wire mesh windscreen.
- Professional XLR connector.
- Metallic brown finish.

#### MZ103Be

- Perfectly balanced response for powerful vocal reproduction.
- Triple-laminated pure beryllium diaphragm.
- Precision photo-silkscreen process acoustic damping system.
- Three-point floating suspension system.
- Extra-durable wire mesh windscreen.
- Professional XLR connector.
- Metallic gray finish.

#### MZ105Be

- Ultimate accuracy for musical instrument pickup.
- Triple-laminated pure beryllium diaphragm.
- Precision photo-silkscreen process acoustic damping system.
- Three-point floating suspension system.
- Extra-durable wire mesh windscreen.
- Professional XLR connector.
- Metallic gray finish.



## MZ203Be

- Superbly smooth response for clear, warm vocal reproduction.
- Triple-laminated pure beryllium diaphragm.
- Precision photo-silkscreen process acoustic damping system.
- Three-point floating suspension system.
- Extra-durable wire mesh windscreen.
- Professional XLR connector.
- Metallic dark gray finish.

## MZ101

- Rich lows and crisp highs for all types of vocal pickup.
- Double-laminated polyester film diaphragm.
- Precision photo-silkscreen process acoustic damping system.
- Three-point floating suspension system.
- Extra-durable wire mesh windscreen.
- Professional XLR connector.
- Metallic brown finish.

## GENERAL SPECIFICATIONS

### MZ205Be

**Type:** Dynamic microphone  
**Frequency response:** 40Hz – 18kHz  
**Directivity:** Unidirectional  
**Nominal impedance:** 250  $\Omega$  (balanced)  
**Minimum load impedance:** 650  $\Omega$   
**Output level:** –77dB/ $\mu$ bar at 1kHz  
**Hum pickup level:** 29dB/mOe SPL equivalent at 50Hz  
**Diaphragm:** 3-layer laminated beryllium  
**Body:** Diecast zinc  
**Grille:** Extra-strength wire mesh  
**Finish:** Metallic dark gray  
**Connector:** 3-pin locking audio connector, gold-plated pins  
**Weight:** 185g  
**Furnished accessory:** MCH-3 Microphone holder

### MZ204

**Type:** Dynamic microphone  
**Frequency response:** 20Hz – 18kHz  
**Directivity:** Unidirectional  
**Nominal impedance:** 250  $\Omega$  (balanced)  
**Minimum load impedance:** 650  $\Omega$   
**Output level:** –77dB/ $\mu$ bar at 1kHz  
**Hum pickup level:** 29dB/mOe SPL equivalent at 50Hz  
**Diaphragm:** 2-layer laminated polyester film  
**Body:** Diecast zinc  
**Grille:** Extra-strength wire mesh  
**Finish:** Metallic dark gray  
**Connector:** 3-pin locking audio connector, gold-plated pins  
**Weight:** 225g  
**Furnished accessory:** MCH-3 Microphone holder

### MZ102Be

**Type:** Dynamic microphone  
**Frequency response:** 40Hz – 18kHz  
**Directivity:** Unidirectional  
**Impedance:** 250  $\Omega$  (balanced)  
**Output level:** –76dB/ $\mu$ bar at 1kHz  
**Diaphragm:** 3-Layer laminated beryllium  
**Body:** Diecast zinc with wire mesh windscreen  
**Finish:** Metallic brown  
**Connector:** Professional audio XLR connector  
**Weight:** 265g (without cord)  
**Furnished accessories:** Stand adaptor MCH-1

### MZ103Be

**Type:** Dynamic microphone  
**Frequency response:** 40Hz-18kHz  
**Directivity:** Unidirectional  
**Impedance:** 250  $\Omega$  (balanced)  
**Output level:** –76dB/ $\mu$ bar at 1kHz  
**Diaphragm:** 3-Layer laminated beryllium  
**Body:** Diecast zinc with wire mesh windscreen  
**Finish:** Metallic gray  
**Connector:** Professional audio XLR connector  
**Weight:** 280g (without cord)  
**Furnished accessories:** Stand adaptor MCH-2

### MZ105Be

**Type:** Dynamic microphone  
**Frequency response:** 40Hz-18kHz  
**Directivity:** Unidirectional  
**Impedance:** 250  $\Omega$  (balanced)  
**Output level:** –77dB/ $\mu$ bar at 1kHz  
**Diaphragm:** 3-Layer laminated beryllium  
**Body:** Diecast zinc with wire mesh windscreen  
**Finish:** Metallic gray  
**Connector:** Professional audio XLR connector  
**Weight:** 275g (without cord)  
**Furnished accessories:** Stand adaptor MCH-2

### MZ203Be

**Type:** Dynamic microphone  
**Frequency response:** 40Hz – 18kHz  
**Directivity:** Unidirectional  
**Nominal impedance:** 200  $\Omega$  (balanced)  
**Minimum load impedance:** 500  $\Omega$   
**Output level:** –76dB/ $\mu$ bar at 1kHz  
**Hum pickup level:** 24dB/mOe SPL equivalent at 50Hz  
**Diaphragm:** 3-layer laminated beryllium  
**Body:** Diecast zinc  
**Grille:** Extra-strength wire mesh  
**Finish:** Metallic dark gray  
**Connector:** 3-pin locking audio connector, gold-plated pin  
**Weight:** 275g  
**Furnished accessory:** MCH-2 stand adaptor

## MZ104

- Broad, flat response for precision musical instrument reproduction.
- Double-laminated polyester film diaphragm.
- Precision photo-silkscreen process acoustic damping system.
- Three-point floating suspension system.
- Extra-durable wire mesh windscreen.
- Professional XLR connector.
- Metallic brown finish.

## MZ106S

- Broad, flat response for vocal pickup.
- Convenient on/off switch.
- Double-laminated polyester film diaphragm.
- Precision photo-silkscreen process acoustic damping system.
- Three-point floating suspension system.
- Extra-durable wire mesh windscreen.
- Professional XLR connector.
- Metallic gray finish.

### MZ101

**Type:** Dynamic microphone  
**Frequency response:** 40Hz-17kHz  
**Directivity:** Unidirectional  
**Impedance:** 250  $\Omega$  (balanced)  
**Output level:** –76dB/ $\mu$ bar at 1kHz  
**Diaphragm:** 2-Layer laminated polyester film  
**Body:** Diecast zinc with wire mesh windscreen  
**Finish:** Metallic brown  
**Connector:** Professional audio XLR connector  
**Weight:** 265g (without cord)  
**Furnished accessories:** Stand adaptor MCH-1

### MZ104

**Type:** Dynamic microphone  
**Frequency response:** 30Hz-17kHz  
**Directivity:** Unidirectional  
**Impedance:** 250  $\Omega$  (balanced)  
**Output level:** –77dB/ $\mu$ bar at 1kHz  
**Diaphragm:** 2-Layer laminated polyester film  
**Body:** Diecast zinc with wire mesh windscreen  
**Finish:** Metallic brown  
**Connector:** Professional audio XLR connector  
**Weight:** 280g (without cord)  
**Furnished accessories:** Stand adaptor MCH-1

### MZ106S

**Type:** Dynamic microphone  
**Frequency response:** 40Hz – 18kHz  
**Directivity:** Unidirectional  
**Nominal impedance:** 250  $\Omega$  (balanced)  
**Minimum load impedance:** 800  $\Omega$   
**Voltage sensitivity:** –77.0dB (0dB = 1V/1 $\mu$ bar) at 1kHz  
**Power sensitivity:** –58.3dB (0dB = 1mW/10 $\mu$ bars) at 1kHz  
**Switch:** ON/OFF switch  
**Finish:** Metallic gray  
**Weight:** 235g (without cord)  
**Furnished accessories:** Microphone stand adaptor (5/8")  
 Threaded brass adaptor (3/8")  
 5 m Cable (XLR type, phone type)  
 Case

## Options & Accessories

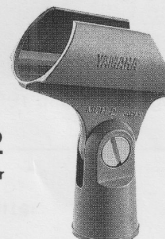
### MCH-1

Stand adaptor  
 (For 101/  
 102Be  
 104)



### MCH-2

Stand adaptor  
 (For 103Be/  
 105Be)



### MCH-3

Microphone holder  
 (For 204/205Be)  
 Available as service parts



### MCW-4

Windscreen  
 (For 104)



### MCW-5

Windscreen  
 (For 105Be)



### CBL-1

Cable  
 16-1/2 ft. (5m) XLR – Pigtail



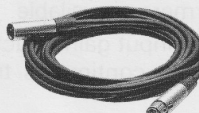
### CBL-2

Cable  
 16-1/2 ft. (5m) XLR-1/4" phone



### CBL-3

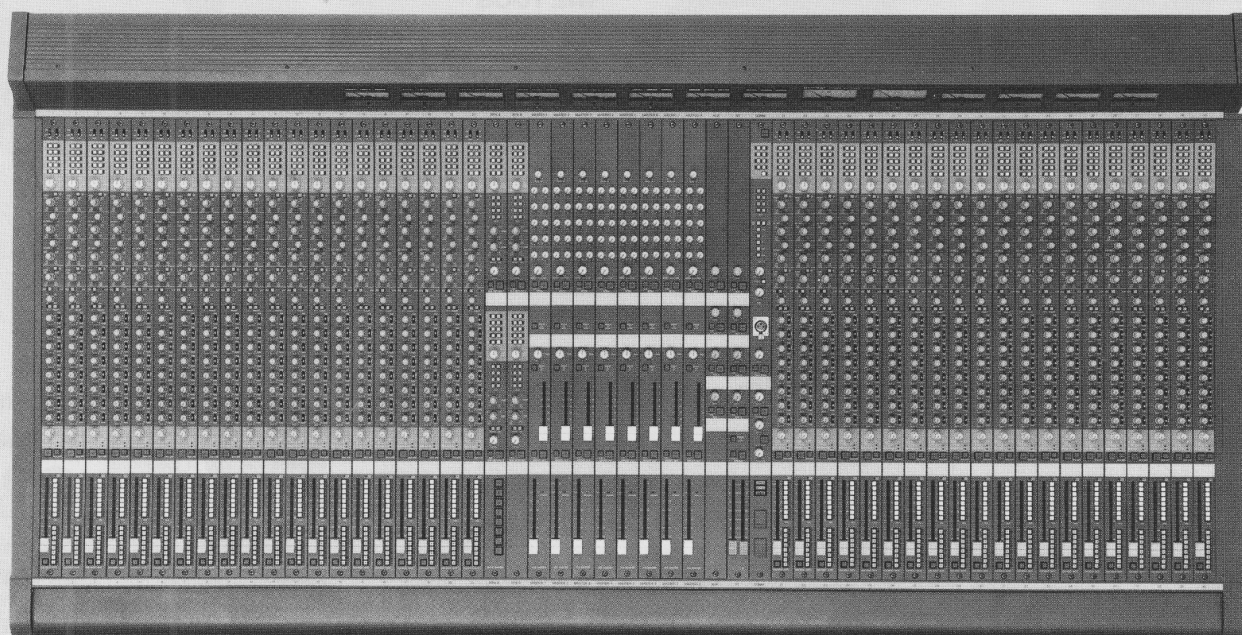
Cable  
 24-1/2 ft. (7.5m) XLR – XLR





# PM3000-24/32/C-40

## PROFESSIONAL AUDIO MIXING CONSOLES



PM3000C-40

- **24-, 32-, or 40-input channel mainframes (Center Master configuration on 40-channel model).**
- **VCA grouping for more flexible control of multiple inputs.**
- **Master Muting allows for instant preset punch-ins.**
- **Exceptionally flexible 4-band equalizers and high-pass filters.**
- **The finest in audio mixing flexibility, performance, and reliability.**

### FEATURES

- 8 Auxiliary mixing busses send on each input channel, each with its own pre/off/post assign switch.
- 8 Group mixing busses, each with its own Master Fader, On/Off switch and Cue switch; assignable to matrix, stereo bus, and rear panel XLR outputs.
- 8 VCA groups, with external interface capability.
- 8 Master mute groups, with 8 mute assign switches on each input channel, for instant "scene" changes.
- Stereo mixing bus which can be "direct assigned" from input channels, or "Grand Master" assigned from groups.
- Mix matrix functions like a separate 11 x 8 mixer within the console.
- 4 Auxiliary returns (stereo), each with 2-band EQ and stereo/mono source switching.
- Balanced differential XLR inputs; optional input transformers may be internally installed.
- Electronically balanced XLR output; optional output transformers available.
- Optimum input gain structure with 5-position input attenuator switch plus continuous trim control.
- Multi-point signal monitoring LED's in each channel give precise input trim and EQ adjustments without risk of inadvertent clipping.
- Extensive input-priority, "in-place" Cue system, plus Solo mode (which mutes other channels).
- Extensive talkback and communications capability; easily interfaces with most popular intercom systems.
- Built-in fixed and variable frequency test oscillator/pink noise source for setup or troubleshooting.
- 14 VU meters with peak LED's, switchable to monitor every bus in the console.
- Numerous LED's indicate status, display clip levels, and illuminate switches with minimal maintenance; only the VU meters have lamps.
- Low-noise, low-distortion, wide-bandwidth circuitry delivers "audiophile" quality.
- Low-profile extruded aluminum chassis affords a clear view of the stage; rugged enough for touring or mobile remote truck applications.



## GENERAL SPECIFICATIONS

### Total Harmonic Distortion

Less than 0.1%, 20 Hz~20 kHz, at +14 dBm output into 600  $\Omega$

### Frequency Response

+1, -3 dB, 20 kHz~20 kHz, at +4 dBm output into 600  $\Omega$

**Hum & Noise** (20 Hz~20 kHz,  $R_s = 150 \Omega$ , Input Gain @ maximum, Input Pad @ 20 dB, except as noted)

- 128 dBm equivalent input noise.
- 95 dBu residual output noise (balanced outputs).
- 81 dBu (85 dB S/N) at GROUP OUT with Master fader at nominal level and all channel assign switches off.
- 74 dBu (81 dB S/N) at GROUP OUT with Master fader and one channel fader at nominal level, and channel assigned to the group bus.
- 54 dBu (48 dB S/N) at GROUP OUT with Master fader and one channel fader at nominal level, all GROUP-TO-MTRX switches off.
- 74 dB (78 dB S/N) at MTRX OUT with MTRX Master and one Matrix Mix control at maximum level, one channel fader at nominal level (assigned to a group that is assigned to that matrix control).
- 75 dB (79 dB S/N) at AUX OUT with Aux Master level control at nominal, all channel AUX mix controls at minimum level.
- 73 dB (77 dB S/N) at AUX OUT with Aux Master level and one channel AUX mix control at nominal level.

### Maximum Voltage Gain

94 dB CH IN to GROUP OUT  
94 dB CH IN to STEREO OUT  
94 dB CH IN to MTRX OUT  
104 dB CH IN to AUX OUT  
94 dB CH IN to CUE OUT  
20 dB AUX RTN to GROUP OUT  
10 dB SUB IN to GROUP OUT  
10 dB SUB IN to STEREO OUT  
10 dB SUB IN to AUX OUT  
0 dB SUB IN to MTRX OUT

### Input Channel Gain Control

34 dB variation in gain stop-to-stop.

### Input Channel Pad Switch

0, 10, 20, 30 or 40 dB of attenuation.

### Input Channel Equalization

15 dB maximum boost or cut in each of the four bands.  
HIGH: 1.6 kHz~16 kHz (peaking or shelving).  
HI-MID: 800 Hz~8 kHz (peaking variable Q from 0.5 to 3.0).  
LD-MID: 160 Hz~1.6 kHz (peaking variable Q from 0.5 to 3.0).  
LOW: 40 Hz~400 Hz (peaking or shelving).

### Input Channel High Pass Filter

12 dB/octave roll-off below 20 Hz to 400 Hz (adjustable -3 dB point).

### Aux RTN Equalization

15 dB maximum boost or cut, shelving curve, in two bands.  
HIGH: 1 kHz~10 kHz  
LOW: 100 Hz~1 kHz.

### Crosstalk

- 70 dB at 1 kHz, adjacent input channels.
- 60 dB at 1 kHz, input to output.

### Oscillator/Noise Generator

Switchable sine wave at 100 Hz, 1 kHz, or 10 kHz (less than 0.1% T.H.D. at +4 dBu output level), or pink noise.

### VU Meters

(0 VU = +4 dBu, 1.23V RMS output level)  
STEREO L & R 2 large, illuminated meters, 12 smaller, illuminated meters, each switchable to monitor multiple circuits:  
Meters 1-8 GROUP OUT/GROUP→MTRX/MTRX  
Meter 9 AUX1/AUX5/CUE L  
Meter 10 AUX2/AUX6/CUE R  
Meter 11 AUX3/AUX7/OSC  
Meter 12 AUX4/AUX8

### Peak Indicators

LED (red) built into each VU meter turns on when post-Master fader level reaches 10 dB below clipping.

### Signal/Clip Indicators

3 LEDs built into each input module monitor levels in the module:  
SIGNAL (green) turns on when pre-EQ signal is 10 dB below nominal level.  
CLIP (red) turns on when pre-EQ signal is 3 dB below clipping.  
EQ CLIP (red) turns on when post-EQ level is 3 dB below clipping.

### Phantom Power

48VDC is applied to electronically balanced inputs or optional transformer-isolated inputs (via 6.8 k $\Omega$  current limiting/isolation resistors) for powering condenser microphones. May be turned on or off via rear-panel phantom master switch; when on, individual channels may be turned off via +48V switch on each input module.

### Power Requirements

Requires Yamaha PW3000A Power Supply; see specifications for that unit.

### Console Dimensions

HEIGHT: 309 mm (12<sup>1</sup>/<sub>8</sub>"")  
DEPTH: 960mm (87<sup>3</sup>/<sub>4</sub>"")  
WIDTH: 24 channel, 1367mm (63<sup>3</sup>/<sub>4</sub>"")  
32 channel, 1643mm (64<sup>3</sup>/<sub>8</sub>"")  
40 channel, 1919mm (75<sup>1</sup>/<sub>2</sub>"")

### Net Weight (excluding power supply)

	24 CH	32 CH	40 CH
	201 lbs	247 lbs	302 lbs
	91 kg	112 kg	137 kg

## INPUT SPECIFICATIONS

Connection	PAD	Gain Trim	Actual load Impedance	For use with Nominal	Input level			Connector In console
					Sensitivity	Nominal	Max before Clip	
CH INPUT, 1-24, 1-32 or 1-40	0	-70	3K $\Omega$ if electronic balanced; 1K $\Omega$ if transformer balanced	50 $\Omega$ to 200 $\Omega$ mics and 600 $\Omega$ lines	-90 dBu (0.025 mV)	-70 dBu (0.25 mV)	-40 dBu (7.75 mV)	XLR-3-31
	0	-36			-56 dBu (1.23 mV)	-36 dBu (12.3 mV)	-16 dBu (123 mV)	
	10	-36			-46 dBu (3.88 mV)	-26 dBu (38.8 mV)	-6 dBu (388 mV)	
	20	-36			-36 dBu (12.3 mV)	-16 dBu (123 mV)	+4 dBu (1.23 V)	
	30	-36			-26 dBu (38.8 mV)	-6 dBu (388 mV)	+14 dBu (3.88 V)	
	40	-36			-16 dBu (123 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	
AUX RETURN, 1-4 (stereo)			10K $\Omega$	600 $\Omega$ lines	-16 dBu (123 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-31
GROUP SUB IN, 1-8			10K $\Omega$	600 $\Omega$ lines	-6 dBu (388 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-31
STEREO SUB IN, L-R			10K $\Omega$	600 $\Omega$ lines	-6 dBu (388 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-31
AUX SUB IN, 1-8			10K $\Omega$	600 $\Omega$ lines	-6 dBu (388 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-31
MTRX SUB IN, 1-8			10K $\Omega$	600 $\Omega$ lines	+4 dBu (1.23 V)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-31
TALKBACK IN	-50		3K $\Omega$	50-250 $\Omega$ mics	-70 dBu (0.25 mV)	-50 dBu (2.45 mV)	-30 dBu (24.5 mV)	XLR-3-31
	+4		3K $\Omega$	600 $\Omega$ lines	-16 dBu (123 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-31
	-50		3K $\Omega$	50-250 $\Omega$ mics	-70 dBu (0.25 mV)	-50 dBu (2.45 mV)	-30 dBu (24.5 mV)	XLR-3-31
COMM IN	-50		3K $\Omega$	600 $\Omega$ lines	-16 dBu (123 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-31
	+4		3K $\Omega$	600 $\Omega$ lines	-16 dBu (123 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-31
CH INSERT IN, 1-24, 1-32, or 1-40			10K $\Omega$	600 $\Omega$ lines	-16 dBu (123 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	Phone Jack (1/4" TRS)
INSERT IN: GROUP, 1-8 STEREO, L-R AUX, 1-8			10K $\Omega$	600 $\Omega$ lines	-16 dBu (123 mV)	-6 dBu (388 mV)	+24 dBu (12.3 V)	Phone Jack (1/4" TRS)

NOTES: (1) Sensitivity is the lowest level that will produce an output of -4 dBu (1.23 V), or the nominal output level, when the circuit is set to maximum gain.  
(2) All XLR connectors are electronically balanced. Phone jacks are balanced with Tip=signal high (+), Ring=signal low (-), and Sleeve=ground.  
(3) 0 dBu is referenced to 0.775 V RMS. Where the circuit is capable of 600 ohm termination, this would be equivalent to 0 dBm.

## OUTPUT SPECIFICATIONS

Connection	Actual source Impedance	For use with Nominal	Output level		Connector In console
			Nominal	Max. before clip	
GROUP OUT, 1-8	150 $\Omega$	600 $\Omega$ lines	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-32
STEREO OUT, L-R	150 $\Omega$	600 $\Omega$ lines	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-32
MATRIX OUT, 1-8	150 $\Omega$	600 $\Omega$ lines	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-32
AUX OUT, 1-8	150 $\Omega$	600 $\Omega$ lines	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-32
CUE OUT, L-R	150 $\Omega$	600 $\Omega$ lines	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-32
TALKBACK OUT,	150 $\Omega$	600 $\Omega$ lines	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-32
CH INSERT OUT (1-24, 1-32 or 1-40)	600 $\Omega$	10K $\Omega$ lines	+4 dBu (1.23 V)	+24 dBu (12.3 V)	Phone Jack (1/4" TRS)
OSCILLATOR OUT			+4 dBu (1.23 V)		XLR-3-32
AUX. INSERT OUT, 1-8	600 $\Omega$	10K $\Omega$ lines	-6 dBu (388 mV)	+24 dBu (12.3 V)	Phone Jack (1/4" TRS)
GROUP INSERT OUT, 1-8	600 $\Omega$	10K $\Omega$ lines	-6 dBu (388 mV)	+24 dBu (12.3 V)	
STEREO INSERT OUT, L-R	600 $\Omega$	10K $\Omega$ lines	-6 dBu (388 mV)	+24 dBu (12.3 V)	
PHONES OUT 1-2	15 $\Omega$	8 $\Omega$ phones	75 mW	150 mW	Phone Jack (1/4" TRS)
		40 $\Omega$ phones	65 mW	130 mW	

NOTES: (1) All XLR connectors are electronically balanced. Phone jacks except the PHONES outputs, are unbalanced. PHONES out phone jacks are wired standard stereo with Tip=Left, Ring=Right, Sleeve=ground.  
(2) 0 dBu is referenced to 0.775 V RMS. Where the circuit is capable of 600  $\Omega$  termination, this would be equivalent to 0 dBm.

\*Input/Output Transformers are optionally available.

## POWER SUPPLY (PW3000A) SPECIFICATIONS

### Dimensions

HEIGHT: 176 mm (6-7/8") (excluding rubber feet; add 3/8" for feet).  
DEPTH: Overall, 457 mm (18");  
Behind panel, 418 mm (16-1/2")  
WIDTH: 480 mm (18-7/8"); for standard rack mounting.

### Fuses

Primary fuses for each of 3 transformers, 250 V, 6 amperes, slo-blow.  
Additionally, the DC supplies each have secondary fuses as follows:  
+20 V supply: 10 A, 250 V slo-blow  
+20 V supply: 10 A, 250 V slo-blow  
+12 V supply: 10 A, 250 V slo-blow  
+48 V supply: 2 A, 250 V slo-blow

### Outputs

+20 VDC at 8 A  
-20 VDC at 8 A  
Ground (common) for 20 V  
+12 VDC at 6.1 A  
+48 VDC at 0.3 A  
Ground (common) for 12 V  
Chassis ground  
Detector A & B

### Umbilical Cables

Two multi-conductor cables with locking, multi-pin connectors convey power to the PM3000 console. Each cable is approximately 3.6 m (10 feet) long. Protected against inadvertent A/B misconnection.

### Cooling

Internal fan, pulls air through foam grille on front panel, exhausts via top and side vents.

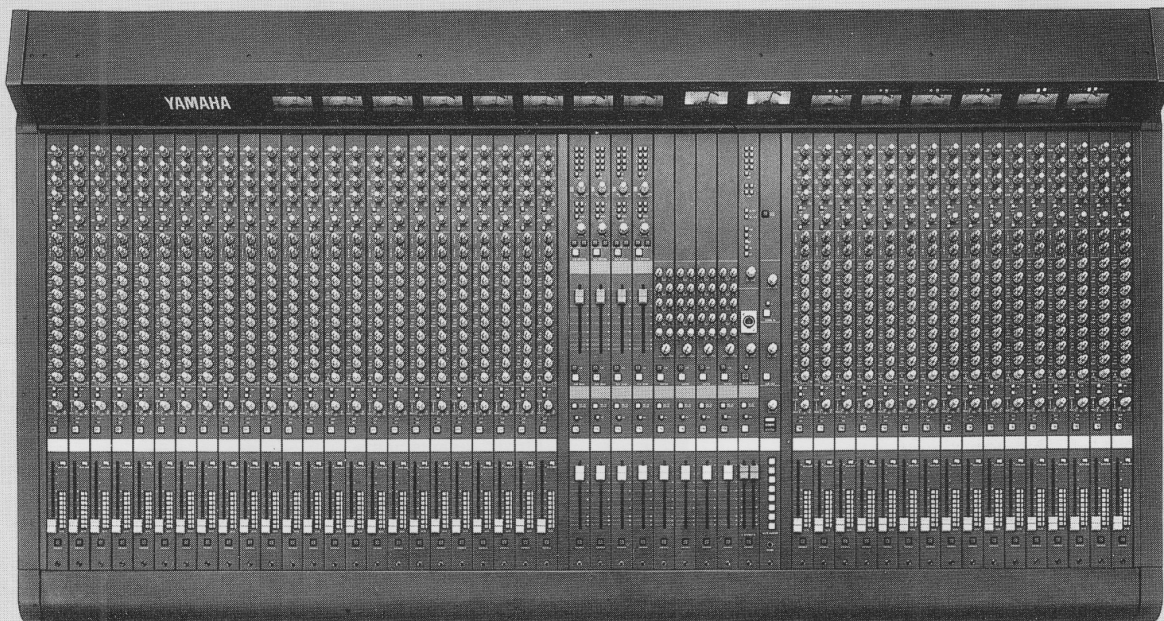
### Power Requirements

U.S. & Canadian models: 105-130 V,  
50/60 Hz  
General model: 220/240 V  $\pm 10\%$ , 50/60 Hz



# PM2800M-32/40-C

## PROFESSIONAL AUDIO MIXING CONSOLE

**New Product**

PM2800M-40-C

- ***Extensive signal-routing and control flexibility for on-stage monitoring applications.***
- ***Available in 32- or 40-channel configurations, each with 8 mix busses and a stereo master buss.***
- ***Optimum reliability and durability with superior sound reinforcement performance.***

### FEATURES

- 8 different monitor mixes via 8 mix busses; plus 4 additional busses provided by auxiliary sends, useful for patching echo or externally processed signals, feeding a tape deck, or for use as additional outputs.
- Signal assignment from the input channels to the 8 busses by the use of level controls rather than simple switches, providing complete freedom and flexibility in setting up monitor mixes.
- Insert patches on all input channels and master busses for maximum system flexibility.
- 8 master mute groups, with 8 mute assign switches on each input channel, permitting multiple channels to be silenced or activated all at once.
- 4 matrix mixes with level controls for all 8 channels, stereo L and R level controls and a master level control.
- True stereo master buss may be assigned from input and Aux channels.
- 4 stereo/mono Aux (effect) returns, assignable to any mix buss (1–8) and master stereo buss with odd/even panning or stereo balance control. They may also be reassigned to Aux sends 1–4.
- Extremely flexible input gain structure with 3-position input attenuator switch plus continuous gain trim control.
- Balanced XLR connectors on all primary input and output channels for complete compatibility with virtually all professional equipment.
- Precision 4-band sweep equalizers on all input channels offer a full 15dB of filtering; variable high-pass filters (20 Hz – 400 Hz) are also provided.
- High-quality, long-throw 100-mm faders provide smooth, responsive operating control of levels.
- Talkback and Communications modules permit total communication between operator, crew, and performers.
- Built-in multi-frequency test oscillator/pink noise source for setup or troubleshooting.
- 16 VU meters switchable to monitor every bus in the console.
- LEDs for each input module light when pre-EQ signal reaches within 3 dB of clipping.
- Exceptional reliability and consistent performance, even under widely varying electrical conditions; strong rejection of hum and local interference ensures clean signal.
- Low profile chassis affords a clear view of the stage; rugged, yet light aluminum construction suits the console for touring or mobile remote truck applications.



## GENERAL SPECIFICATIONS

**Total Harmonic Distortion**

Less than 0.1%, 20 Hz~20 kHz, +14 dBu output

**Frequency Response**

+1, -3 dB, 20 Hz~20 kHz, +4 dBu output

**Hum & Noise**

(20 Hz~20 kHz,  $R_s=150\Omega$ , Input Pad=0 dB, Input Sensitivity= -60 dB, except as noted)

- 128 dBu equivalent input noise.
- 95 dBu residual output noise (balanced outputs).
- 72 dBu at MIX OUT, Master fader nominal, all channel assign switches off.
- 64 dBu (68 dB S/N) at MIX OUT, Master and one channel fader nominal, channel assigned to mix buss.
- 72 dBu at STEREO OUT, Stereo Master fader nominal, all channel assign switches off.
- 64 dBu (68 dB S/N) at STEREO OUT, Stereo Master and one channel fader nominal.
- 84 dBu at MTRX OUT, MTRX Master and all matrix mix controls nominal, MIX-TO-MTRX switches off.
- 70 dBu (74 dB S/N) at MTRX OUT, MTRX Master and one Matrix Mix control nominal, one channel fader and corresponding assigned mix fader nominal, channel switch off.
- 70 dBu at AUX OUT, Aux Master level control nominal, all channel AUX mix controls minimum.
- 64 dBu (68 dB S/N) at AUX OUT, Aux Master level and one channel AUX mix control nominal.

**Maximum Voltage Gain**

94 dB CH IN to MIX OUT  
 94 dB CH IN to STEREO OUT  
 104 dB CH IN to MTRX OUT  
 94 dB CH IN to AUX OUT  
 74 dB CH IN to CUE OUT  
 20 dB AUX RTN to MIX OUT  
 10 dB SUB IN to MIX OUT  
 10 dB SUB IN to AUX OUT

**Input Channel Gain Control**

34 dB range.

**Input Channel Pad Switch**

0, 20, 40 dB

**Input Channel Equalization**

(15 dB maximum boost or cut)

HIGH: 16 kHz~16 kHz (shelving)  
 HIGH-MID: 800 Hz~8 kHz (peaking)  
 LO-MID: 160 Hz~1.6 kHz (peaking)  
 LOW: 40 Hz~400 Hz (shelving)

**Input Channel High-pass Filter**

12 dB/oct. rolloff below 20 Hz~400 Hz (adjustable -3 dB point).

**Crosstalk**

-60 dB at 1 kHz

**Oscillator/Noise Generator**

Sine wave switchable to 100 Hz, 1 kHz or 10 kHz. Pink noise.

**VU Meters**

(All meters calibrated for 0 VU= +4 dBu output)

Meters 1-8: MIX 1-8  
 Meter 9: STEREO L  
 Meter 10: STEREO R  
 Meters 11-14: AUX 1-4/MTRX 1-4  
 Meter 15: CUE-L/TB  
 Meter 16: CUE-R/OSC

**Clip Indicators**

LEDs for each input module: CLP (red) lights when pre-EQ signal is 3-dB below clipping.  
 EQ CLIP (red) lights when post-EQ signal is 3-dB below clipping

**Phantom Power**

48 V DC applied to electronically balanced inputs or optional transformer-isolated inputs (via 6.8 k $\Omega$  current limiting/isolation resistors).

**Power Requirements**

All power requirements met by Yamaha PW2800 Power Supply; see specifications below.

**Console Dimensions (W×H×D)****PM2800M-40-C:** 1,860 × 315 × 954 mm (73-7/32" × 12-13/32" × 37-9/16")**PM2800M-32:** 1,576 × 315 × 954 mm (62-1/16" × 12-13/32" × 37-9/16")**Options**

IT1800 Input Transformer  
 OT3000 8-output Transformer Set  
 OT1800 4-output Transformer Set  
 Miniature gooseneck lamps to mate with 4-pin XLR-type sockets on console 3 on 32-channel, 4 on 40-channel frame).  
 Dust Cover

NOTE: 0 dBu=0.775 Vrms

## INPUT SPECIFICATIONS

Connection	PAD	Gain Trim	Actual Load Impedance	For Use with Nominal	Input Level			Connector in Mixer
					Sensitivity	Nominal	Max before Clip	
CH Input	0	-60	3k $\Omega$	50 ~ 600 $\Omega$ mics & 600 $\Omega$ lines	-90dBu (0.025mV)	-60dBu (0.75mV)	-34dBu (15.5mV)	XLR-3-31 type
1-32 (32 ch)	0	-26		-56dBu (1.23mV)	-26dBu (38.8mV)	0dBu (775mV)		
1-40 (40 ch)	20	-26		-36dBu (12.3mV)	-6dBu (388mV)	+20dBu (7.75V)		
				-16dBu (123mV)	+14dBu (3.88V)	+24dBu (12.3V)		
AUX RETURN, 1-4 (Stereo)			10k $\Omega$	600 $\Omega$ lines	-16dBu (123mV)	+4dBu (1.23V)	+24dBu (12.3V)	XLR 3-31 type
SUB IN MIX, 1-8			10k $\Omega$	600 $\Omega$ lines	-16dBu (123mV)	+4dBu (1.23V)	+24dBu (12.3V)	XLR-3-31 type
SUB IN AUX, 1-4								
SUB IN CUE			47k $\Omega$					Phone Jack
TALKBACK IN	-50		3k $\Omega$	50 ~ 600 $\Omega$ mics	-70dBu (0.25mV)	-50dBu (2.45mV)	-24dBu (48.9mV)	XLR-3-31 type
	+4	600 $\Omega$ lines		-16dBu (123mV)	+4dBu (1.23V)	+24dBu (12.3V)		
COMM IN	-50		3k $\Omega$	50 ~ 600 $\Omega$ mics	-70dBu (0.25mV)	-50dBu (2.45mV)	-24dBu (48.9mV)	XLR-3-31 type
	+4	600 $\Omega$ lines		-16dBu (123mV)	+4dBu (1.23V)	+24dBu (12.3V)		
CH INSERT IN MIX, 1-8 AUX, 1-4 ST, L/R MTRX, 1-4			10 $\Omega$	600 $\Omega$ lines	-16dBu (123mV)	-6dBu (388mV)	+20dBu (7.75V)	Phone Jack

NOTES: (1) 0dBu=0.775Vrms.  
 (2) Sensitivity is the lowest level that will produce the nominal output level (+4dBu=1.23V).  
 (3) All XLR-3-31 connectors are electronically balanced.  
 (4) Phone jacks except CH INSERT IN are unbalanced.

## OUTPUT SPECIFICATIONS

Connection	Actual Source Impedance	For Use with Nominal	Output Level		Connector in Mixer
			Nominal	Max. before Clip	
MIX OUT, 1-8	150Ω	600Ω lines	+4dBu (1.23V)	+24dBu (12.3V)	XLR 3-32 type
AUX OUT, 1-4					
STEREO OUT, L/R					
MTRX OUT, 1-4					
CUE OUT, L/R					
OSC OUT					
TALKBACK OUT	600Ω	10kΩ lines	-6dBu (388mV)	+20dBu (7.75V)	Phone Jack
CH INSERT OUT					
MIX, 1-8					
AUX, 1-4					
ST, L/R					
MTRX, 1-4					
PHONES OUT	15Ω	8Ω phones	75 mW	150 mW	STEREO
		40Ω phones	65 mW	130 mW	Phone Jack

NOTES: (1) 0dBu=0.775Vrms.  
 (2) All XLR-3-32 connectors are electronically balanced.  
 (3) All Phone jacks are unbalanced.

Input/Output Transformers are optionally available.

## POWER SUPPLY (PW2800) SPECIFICATIONS

**Dimensions**

HEIGHT: 132 mm (5.2") (excluding rubber feet; add 10.5 mm (7/16") for feet).  
 DEPTH: Overall, 429.2 mm (16.9")  
 Behind panel, 394 mm (15.5")  
 WIDTH: 480 mm (18.9"); for standard rack mounting.

**Fuses**

Primary fuse for transformer, 250 V 7 amperes  
 Additionally, the DC supplies each have secondary fuses as follows:  
 ±17 VDC supply: 6 A, 250 V  
 +12 VDC: 10 A, 250 V  
 +48 VDC: 2 A, 250 V

**Outputs**

+17 VDC  
 -17 VDC  
 Ground (common) for 17 V  
 +12 VDC  
 +48 VDC  
 Ground (common) for 12 V  
 Chassis ground

**Umbilical Cables**

One multi-conductor cable with locking, multi-pin connectors convey power to PM2800M console. A cable is approximately 3.6 m (10 feet) long.

**Cooling**

Internal fan pulls air through foam grille on front panel, exhaust via top side vents.

**Power Requirements**

U.S. & Canadian models: 120 V (105-130 V), 60 Hz  
 General model: 220-240 V, 50/60 Hz

**Power Consumption**

U.S. & Canadian models: 450 W  
 General model: 550 W

# PM1800-40/32/24/16

## PROFESSIONAL AUDIO MIXING CONSOLE



PM1800-32

- **16-, 24-, 32-, or 40-input channel mainframes (Center Master configuration on 40-channel version).**
- **Stable, wide-range, non-saturating input circuitry.**
- **Master mute function permits instantaneous punch-ins/outs.**
- **Versatile and precise 4-band sweepable equalization and high pass filters on each channel.**
- **Optimum flexibility and performance in a sturdy, compact package.**

### FEATURES

- Exceptionally low noise, low distortion, wide bandwidth circuitry furnishes truly audiophile quality in a professional mixing console.
- Extensive input-priority, cue system, as well as a solo mode that mutes all other input channels.
- 8 group mixing busses, each with its own master fader, on/off switch and cue switch; assignable to matrix, stereo bus, and rear panel XLR outputs.
- 8 master mute groups, with 8 mute assign switches on each input channel, permitting multiple channels to be silenced or activated all at once.
- Mix matrix offers a separate 8x4 mixer within the console.
- Stereo mixing bus, assigned from groups, plus Group 7/8 stereo assign for an additional stereo mix.
- 4 Stereo Aux (effect) returns, each switchable for use with stereo or mono sources.
- Extremely flexible input gain structure with 3-position input attenuator switch plus continuous gain trim control.
- Multi-point signal monitoring LEDs in each channel aid in making precise input trim and EQ adjustments while protecting against inadvertent clipping.
- Balanced differential XLR inputs; optional input transformers may be internally installed.
- Electronically balanced XLR outputs; optional (external) output transformers available.
- Complete talkback and communications capabilities; easily interfaces with most popular intercom systems.
- Built-in multi-frequency test oscillator/pink noise source for setup or troubleshooting.
- 13 VU meters (10 meters in 16-channel version) switchable to monitor every bus in the console.
- Numerous LEDs indicate status, clip levels, and illuminate switches with minimal maintenance; only the VU meters have lamps.
- Low profile chassis affords a clear view of the stage; rugged, yet light aluminum construction suits the console for touring, mobile truck, and other applications.



## GENERAL SPECIFICATIONS

### Total Harmonic Distortion

Less than 0.1%, 20Hz~20kHz, at +14dBm output into 600 $\Omega$

### Frequency Response

+1, -3dB, 20Hz~20kHz, at +4dBm output into 600 $\Omega$

### Hum & Noise

(20Hz~20kHz\*  $R_s = 150\Omega$ , Input Pad = 0dB, Input sensitivity = -60dB, except as noted)  
 -128dBm equivalent input noise.  
 -93dBu residual output noise (balanced outputs)  
 -74dBu at GROUP OUT with Master fader at nominal level and all channel assign switches off.  
 -64dBu (68dB S/N) at GROUP OUT with Master fader and one channel fader at nominal level, and channel assigned to the group bus.  
 -82dBu at STEREO OUT with Stereo Master Stereo Master fader at nominal level and all channel assign switches off.  
 -74dBu (78dB S/N) at STEREO OUT with Stereo Master fader and one channel fader at nominal level.  
 -84dBu at MTRX OUT with MTRX Master and all matrix mix controls at maximum level, all GROUP-TO-MTRX switches off.  
 -70dBu (74dB S/N) at MTRX OUT with MTRX Master and one Matrix Mix control at maximum level, one channel fader at nominal level, and the corresponding assigned group fader at nominal level.  
 -65dBu at AUX OUT with Aux Master level control at nominal, all channel AUX mix controls at minimum level (Pre/Off/Post switches Off).  
 -63dBu (67dB S/N) at AUX OUT with Aux Master level and one channel AUX mix control at nominal level.

### Maximum Voltage Gain

84dB CH IN to GROUP OUT  
 94dB CH IN to STEREO OUT  
 84dB CH IN to MTRX OUT  
 94dB CH IN to AUX OUT  
 84dB CH IN to CUE OUT  
 20dB AUX RTN to GROUP OUT  
 10dB SUB IN to GROUP OUT  
 10dB SUB IN to AUX OUT

### Input Channel Gain Control

34dB variation in gain stop-to-stop.

### Input Channel Pad Switch

0, 20, 40 dB of attenuation.

### Input Channel Equalization

15dB maximum boost or cut in the each of 4 bands.  
 HIGH: 1.6kHz~16kHz (shelving)  
 HI-MID: 800Hz~8kHz (peaking)  
 LO-MID: 160Hz~1.6kHz (peaking)  
 LOW: 40Hz~400Hz (shelving)

### Input Channel High Pass Filter

12dB/oct. roll off below 20Hz~400Hz (adjustable -3dB point).

**Crosstalk** -60dB at 1kHz

### Oscillator/Noise Generator

Switchable sine wave at 100Hz, 1kHz, or 10kHz (less than 1% THD) at +4dBu output level, or pink noise.

### VU Meters

**STEREO L & R:** 2 large, illuminated meters with Peak LEDs. Other meters are smaller size without Peak LEDs. All meters calibrated for 0 VU = +4dBu = 1.23Vrms output; Peak LEDs turn on 10dB before clipping.

### 24, 32 or 40 channel consoles:

Meters 1-4 GROUP/MTRX  
 Meter 5 GROUP 5/AUX 1  
 Meter 6 GROUP 6/AUX 2  
 Meter 7 GROUP 7/AUX 3  
 Meter 8 GROUP 8/AUX 4  
 Meter 9 CUE L/AUX 5  
 Meter 10 CUE R/AUX 6  
 Meter 11 OSC  
 Meter 12 STEREO L  
 Meter 13 STEREO R

### 16 channel console:

Meters 1-4 GROUP/MTRX/AUX  
 Meter 5 GROUP 5/CUE L/AUX 5  
 Meter 6 GROUP 6/CUE R/AUX 6  
 Meter 7 GROUP 7/OSC  
 Meter 8 GROUP 8  
 Meter 9 STEREO L  
 Meter 10 STEREO R

### Signal/Clip Indicators

2 LEDs built into each input module monitor levels in the module:  
 CLIP (red) turns on when pre-EQ signal is 3dB below clipping.  
 EQ CLIP (red) turns on when post-EQ level is 3dB below clipping.

### Phantom Power

48 V DC is applied to electronically balanced inputs or optional transformer-isolated inputs (via 6.8k $\Omega$  current limiting/isolation resistors) for powering condenser microphones. May be turned on or off via rear-panel phantom master switch; when on, individual channels may be turned off via +48 V switch on each input module.

### Power Requirements

Requires Yamaha PW1800 power supply; see specifications for that unit.

### Console Dimensions (W x H x D)

**PM1800-40:** 1,854mm x 308mm x 866mm (73" x 12-1/8" x 34")  
**PM1800-32:** 1,578mm x 308mm x 866mm (62-1/8" x 12-1/8" x 34")  
**PM1800-24:** 1,290mm x 308mm x 866mm (50-3/4" x 12-1/8" x 34")  
**PM1800-16:** 1,003mm x 308mm x 866mm (39-1/2" x 12-1/8" x 34")

### Net Weight (excluding power supply)

**PM1800-40:** 102kg (220-1/2 lbs.) **PM1800-32:** 88kg (198-3/8 lbs.)  
**PM1800-24:** 73kg (176-3/8 lbs.) **PM1800-16:** 57kg (154-3/8 lbs.)

**NOTE:** 0 dBu is referenced to 0.775 Vrms. 0 dBm is referenced to 1 mW.

\* "Brick wall" 20kHz bandwidth equivalent filter obtained by using 6dB/oct. low pass filter at 12.7kHz.

## INPUT SPECIFICATIONS

INPUT Terminal	PAD	Gain Trim	Actual load Impedance	For use with Nominal	Input level			Connector in console
					Sensitivity	Nominal	Max. before clip	
CH INPUT (1 - *)	0	-60	3k $\Omega$	50~600 $\Omega$ mics & 600 $\Omega$ lines	-80dBu (0.075mV)	-60dBu (0.75mV)	-34dBu (15.5mV)	XLR 3-31
	0	-26			-46dBu (3.88mV)	-26dBu (38.8mV)	0dB (775mV)	
	20	-26			-26dBu (38.8mV)	-6dBu (388mV)	+20dBu (7.75V)	
	40	-26			-6dBu (388mV)	+14dBu (3.88V)	+24dBu (12.3V)	
AUX RETURN 1~4 (stereo)			10k $\Omega$	600 $\Omega$ lines	-16dBu (123mV)	+4dBu (1.23V)	+24dBu (12.3V)	XLR-3-31
SUB IN	GROUP 1~8		10k $\Omega$	600 $\Omega$ lines	-6dBu (388mV)	+4dBu (1.23V)	+24dBu (12.3V)	XLR-3-31
	AUX 1~6		10k $\Omega$					16ch Phone Jack (TRS); others XLR-3-31
	CUE		47k $\Omega$					Phone Jack (TRS)
TALK BACK IN	-50	+4	3k $\Omega$	50~600 $\Omega$ mics	-70dBu (0.25mV)	-50dBu (2.45mV)	-24dBu (48.9mV)	XLR-3-31
	-50			600 $\Omega$ lines	-16dBu (123mV)	+4dBu (1.23V)	+24dBu (12.3V)	
COMM IN	-50	+4	3k $\Omega$	50~600 $\Omega$ mics	-70dBu (0.25mV)	-50dBu (2.45mV)	-24dBu (48.9mV)	XLR-3-31
	-50			600 $\Omega$ lines	-16dBu (123mV)	+4dBu (1.23V)	+24dBu (12.3V)	
INSERT IN	CH 1 - *	+4	10k $\Omega$	600 $\Omega$ lines	-16dBu (123mV)	-6dBu (388mV)	+20dBu (7.75V)	Phone Jack (TRS)
INSERT IN	GROUP 1~8							
INSERT IN	AUX 1~6							

**NOTES:** (1) Sensitivity is the lowest level that will produce an output of +4dBu (1.23V), or the nominal output level, when the circuit is set to maximum gain.

(2) All XLR connectors are electronically balanced. Phone jacks are unbalanced except the AUX SUB IN in PM1800-16.

(3) 0dBu is referenced to 0.775V RMS. Where the circuit is capable of 600 $\Omega$  termination, this would be equivalent to 0dBm.

\* PM1800-40 has 40 input channels, PM1800-32 has 32 input channels, PM1800-24 has 24 input channels, PM1800-16 has 16 input channels.

## OUTPUT SPECIFICATIONS

INPUT Terminal	Actual source Impedance	For use with Nominal	Output level		Connector in console
			Nominal	Max. before clip	
GROUP OUT 1~8 STEREO OUT L, R MATRIX OUT 1~4 AUX OUT 1~6 CUE OUT L, R OSC OUT TALKBACK OUT	150 $\Omega$	600 $\Omega$ lines	+4dBu (1.23V)	+24dBu (12.3V)	XLR 3-32
INSERT OUT CH INSERT OUT GROUP 1~8 INSERT OUT AUX 1~6	600 $\Omega$	10k $\Omega$ lines	-6dBu (388mV)	+20dBu (7.75V)	Phone Jack (TRS)
PHONES OUT	15 $\Omega$	8 $\Omega$ phones	75mW	150mW	Stereo Phone Jack
		40 $\Omega$ phones	65mW	130mW	

**NOTES:** (1) All XLR connectors are electronically balanced. Phone jacks are unbalanced.

PHONES out phone jacks are wired standard stereo with Tip - Left, Ring - Right, Sleeve - ground.

(3) 0dBu is referenced to 0.775V RMS. Where the circuit is capable of 600 $\Omega$  termination, this would be equivalent to 0dBm.

\* Input/Output Transformers are optionally available.

## POWER SUPPLY (PW1800) SPECIFICATIONS

### Dimensions

HEIGHT: 132mm (5.2")  
 (excluding rubber feet, add 10.5mm (7/16") for feet).  
 DEPTH: Overall, 429.2mm (16.9");  
 Behind panel, 394mm (15.5").  
 WIDTH: 480mm (18.9");  
 for standard rack mounting.

### Fuse

Primary fuse 7 amp, slo-blow.

### AC Requirements

**US & Canadian models:**

105 - 130V 50/60Hz

**General models:**

220/240V  $\pm 10\%$ , 50/60Hz

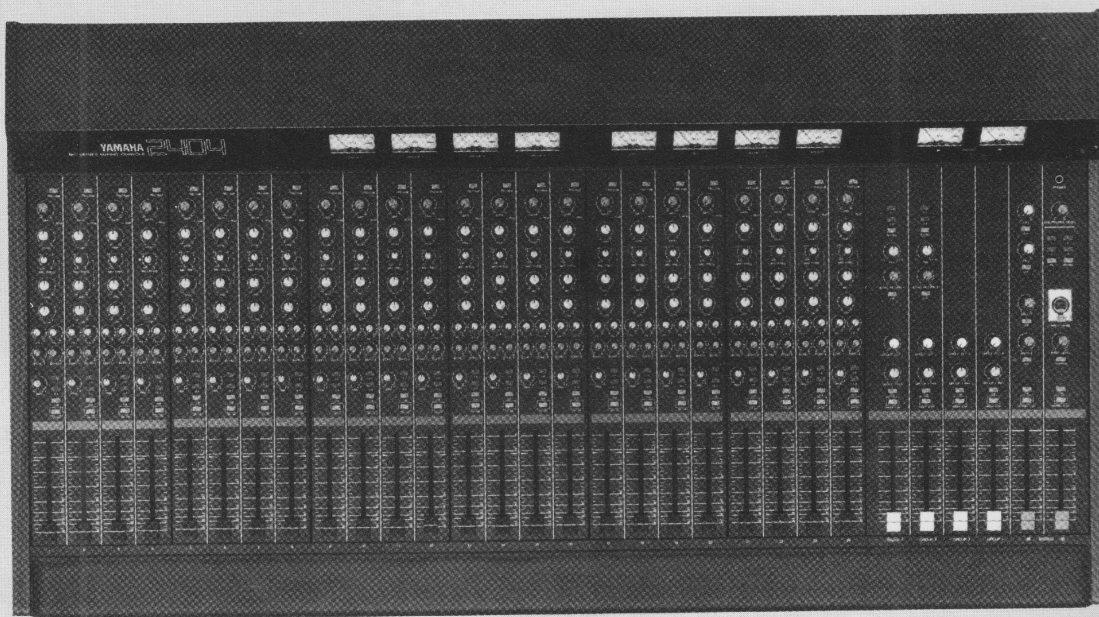
### Umbilical Cable

Multi-conductor cable with locking, multi-pin connector conveys power to the PM1800 console. Cable is approximately 3.6m (10 ft.) long.

### Cooling

Internal fan, pulls air through foam grille on front panel, exhausts via top and side vents.

# MC 2404/1604/1204

**AUDIO MIXING CONSOLES**

MC2404

- *The finest in professional mixing consoles, with 12, 16, or 24 inputs.*
- *Complete compatibility with nearly all professional audio equipment.*
- *Light, compact, and rugged for mixing on the road as well as in the studio.*

## FEATURES

- Balanced XLR connectors on all primary input and output channels for complete compatibility with virtually all professional equipment.
- 8 mixing busses - 4 program, 2 echo and 2 foldback - and a stereo master buss.
- Insert patch points on all input channels and program busses offer maximum flexibility.
- Input channel equalizers offer a full 15dB of filtering in three bands with a sweepable midrange control for extra fine EQ control.
- On/Off switches on all input channels greatly simplify channel punch-in/out operation.
- Phantom power supply with 4 input channel selections for ease and convenience when using phantom-powered microphones.
- Sophisticated Cue system allows operator to monitor via headphones all inputs, busses, and/or effects without altering or interrupting mix.
- Switchable Pads and Gain controls on all channels allow channel sensitivity to be set to accept microphones, electrical instruments, or output from nearly any signal processing equipment.
- Illuminated, highly precise VU meters are switchable to provide ac-

curate monitoring of program, foldback, echo, and stereo mixing busses (the MC2404 has independent meters for each buss); built-in peak LED's indicate high level peaks to avoid even momentary distortion.

- Peak LED's on each input channel light whenever post-EQ/pre-fader signal comes within 3 dB of clipping.
- Sophisticated Talkback system permits total communication between operator, crew and performers.
- Pan and Group assignment switches on all inputs allow channel signals to be either independently assigned to one of the program busses or simultaneously panned between groups 1 & 2 and 3 & 4.
- Foldback and Echo master control the signal level sent to respective output channels; Stereo master faders control overall level of corresponding Stereo output channel.
- Echo pan & Stereo assign switches and Group pan controls give exceptional flexibility in signal placement.
- Rugged construction throughout, and lightweight, compact overall dimensions make the MC series ideal for both touring and in-house installation.



## GENERAL SPECIFICATIONS

## Frequency Response

20Hz to 20kHz 0  $\pm$  1dB (@600 $\Omega$  + 4dB)THD < 0.1% (20Hz to 20kHz @600 $\Omega$  + 4dB)

## Noise Level\*

Equivalent Input Noise -128dB (Rs 150 $\Omega$ )

Residual Noise -95dB

## GROUP OUT

-86dB GROUP Level Volume (nominal)\*\* All Channel assign switches (off)

-64dB GROUP Level Volume (nominal)\*\* One input fader (nominal)\*\*

## STEREO OUT

-76dB GROUP Fader (max.) All GROUP faders (min.)

-64dB GROUP Fader (max.) One input fader and One GROUP fader (nominal)\*\*

## FB OUT

-67dB GROUP Level control (nominal)\*\* All input FB volumes (min.)

-62dB GROUP Level control (nominal)\*\* One input FB volume (nominal)\*\*

## ECHO SEND

-67dB GROUP Level control (nominal)\*\* All input ECHO volumes (min.)

-62dB GROUP Level control (nominal)\*\* One input ECHO volume (nominal)\*\*

## Max. Voltage Gain

INPUT - GROUP OUT 76dB

INPUT - STEREO OUT 76dB

INPUT - FB OUT 76dB

INPUT - ECHO SEND 82dB

ECHO RTN - GROUP OUT 12dB

TALKBACK INPUT - GROUP OUT 66dB

GROUP SUB IN - GROUP OUT 6dB

FB SUB IN - FB OUT 6dB

ECHO SUB IN - ECHO SEND 6dB

## Equalizer Characteristics

LOW-EQ  $\pm$  15dB (100Hz Shelving)MID-EQ  $\pm$  15dB (350Hz to 5kHz Peaking)HIGH-EQ  $\pm$  15dB (10kHz Shelving)

## Crosstalk (1 kHz)

MIXBUS to MIXBUS &lt; -60dB

INPUT Channel to INPUT Channel &lt; -60dB

## VU Meter

## MC2404

GROUP 1 to 4, FB 1,2, ECHO 1,2, STEREO L R

## MC1204 MC1604

GROUP 1/FB 1, GROUP 2/FB 2, GROUP 3/ECHO 1, GROUP 4/ECHO 2, STEREO L R

## Peak Indicator

INPUT (Red) Lights 3dB below clipping

VU (Red) Lights 8dB above 0VU

## Power Requirements

U.S. &amp; Canadian models 120V 60Hz

General Model 110V to 120V/220V to 240V 50/60Hz

## Power Consumption

U.S. &amp; Canadian models 70W

General model 80W

## Dimensions (W x H x D)

MC2404 1,232mm x 185.5mm x 654.3mm (48 1/2" x 7-5/16" x 25-3/4")

MC1604 919mm x 185.5mm x 654.3mm (36-3/16" x 7-5/16" x 25-3/4")

MC1204 762.5mm x 185.5mm x 654.3mm (30" x 7-5/16" x 25-3/4")

## Weight

MC2404 34kg (74 lbs 13 oz)

MC1604 26kg (57 lbs 3 oz)

MC1204 22kg (48 lbs 6 oz)

\* Measured with a -6dB/oct. LPF @12.7kHz \*\* nominal = 6dB below max.

Specifications subject to change without notice. 0dB = 0.775V

## INPUT SPECIFICATIONS

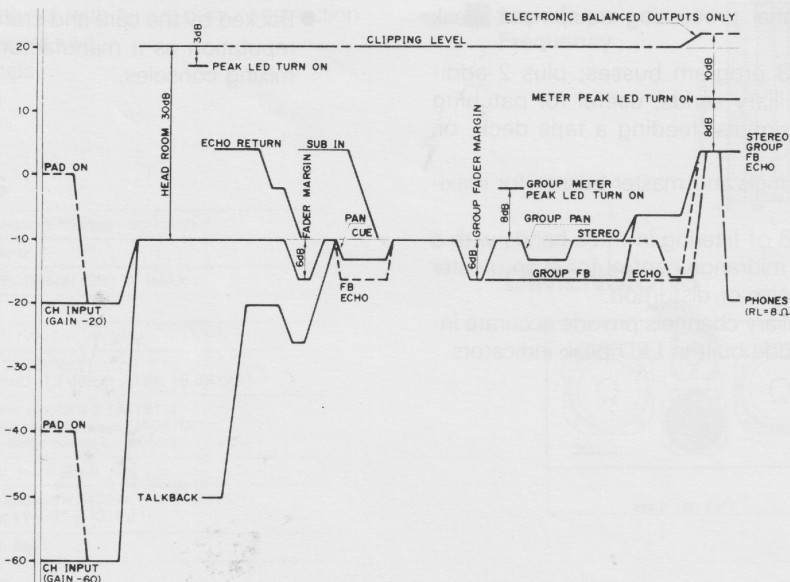
Input terminals	Input level		Input impedance	Source impedance	Sensitivity	Input level		Connector
	PAD	GAIN				Rated level	Max. non-clipping level	
CH INPUT (1 to 24)	OFF (0 dB)	-60 dB	LO Z 4 k $\Omega$	50 to 250 $\Omega$ microphones or 600 $\Omega$ lines	-72 dB (0.195 mV)	-60 dB (0.775 mV)	-30 dB (24.5 mV)	XLR type (Balanced)
		-20 dB	HI Z 10 k $\Omega$		-32 dB (19.5 mV)	-20 dB (77.5 mV)	+10 dB (2.45 V)	
	ON (20 dB)				-12 dB (195 mV)	0 dB (775 mV)	+20 dB (7.75 V)	
CH INSERT IN (1 to 24)			10 k $\Omega$	600 $\Omega$ lines	-22 dB (6.16 mV)	-10 dB (245 mV)	+20 dB (7.75 V)	Phone Jack (TRS) (Unbalanced)
GROUP INSERT IN (1 to 4)			5 k $\Omega$	600 $\Omega$ lines	-16 dB (123 mV)	-10 dB (245 mV)	+20 dB (7.75 V)	Phone Jack (TRS) (Unbalanced)
ECHO RETURN (1, 2)			10 k $\Omega$	600 $\Omega$ lines	-8 dB (309 mV)	+4 dB (1.23 V)	+20 dB (7.75 V)	Phone Jack (Unbalanced)
SUB IN (GROUP 1 to 4 FB 1, 2, ECHO 1, 2)			10 k $\Omega$	600 $\Omega$ lines	-2 dB (616 mV)	+4 dB (1.23 V)	+20 dB (7.75 V)	Phone Jack (Unbalanced)
TALKBACK INPUT			10 k $\Omega$	50 to 250 $\Omega$ microphones	-62 dB (0.616 mV)	-50 dB (2.45 mV)	-10 dB (245 mV)	KLB-3-31 (Unbalanced)

## OUTPUT SPECIFICATIONS

Output terminals	Output impedance	Load impedance	Output level		Connector
			Rated level	Max. non-clipping level	
GROUP OUT (1 to 4)	150 $\Omega$	600 $\Omega$ lines	+4 dB (1.23 V)	+22 dB (9.76 V)	XLR type (Balanced)
STEREO OUT (L, R)	150 $\Omega$	600 $\Omega$ lines	+4 dB (1.23 V)	+22 dB (9.76 V)	XLR type (Balanced)
FB OUT (1, 2)	150 $\Omega$	600 $\Omega$ lines	+4 dB (1.23 V)	+22 dB (9.76 V)	XLR type (Balanced)
ECHO SEND (1, 2)	150 $\Omega$	600 $\Omega$ lines	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack (Unbalanced)
CH INSERT OUT (1 to 24)	100 $\Omega$	10 k $\Omega$ lines	-10 dB (245 mV)	+20 dB (7.75 V)	Phone Jack (TRS) (Unbalanced)
GROUP INSERT OUT (1 to 4)	600 $\Omega$	10 k $\Omega$ lines	-10 dB (245 mV)	+20 dB (7.75 V)	Phone Jack (TRS) (Unbalanced)
PHONES	100 $\Omega$	8 $\Omega$ phones	1mW	20mW	STEREO Phone Jack (Unbalanced)
		40 $\Omega$ phones	3mW	130mW	

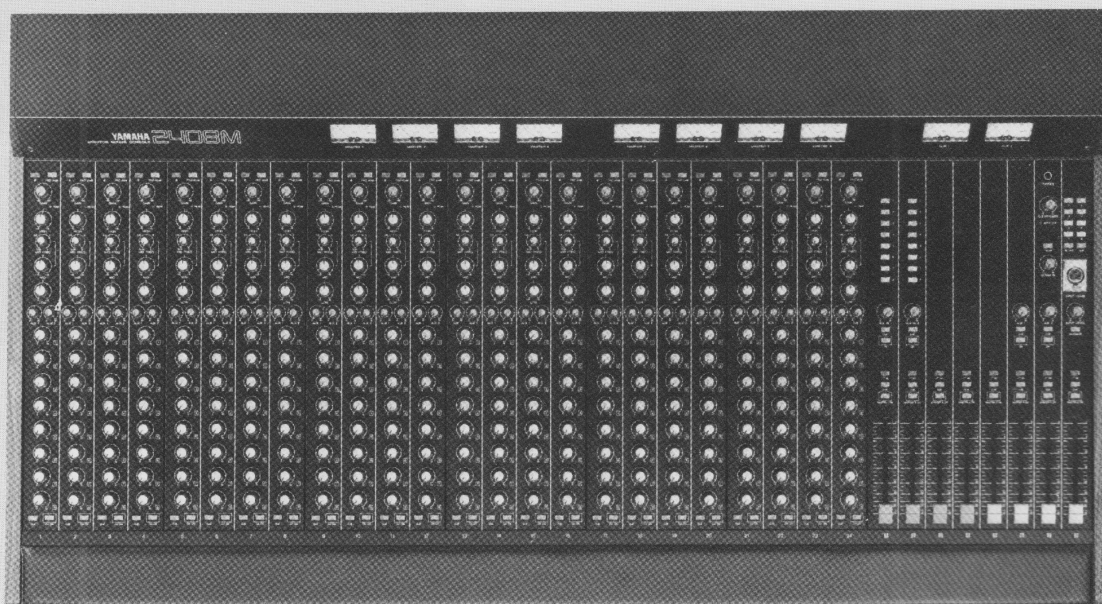
\* Input level required to produce rated +4 dB output level. 0 dB = 0.775 V

## LEVEL DIAGRAM



# MC2408M/1608M

## MONITOR MIXING CONSOLES



MC2408M

- *Mixing consoles specifically designed for flexible, efficient on-stage monitoring for performing musicians.*
- *16 or 24 inputs, with complete professional compatibility.*
- *Extensive patching facilities for optimum system flexibility.*
- *Slim, light, and built to take the rigors of touring.*

### FEATURES

- Balanced XLR connectors on all primary input and output channels for complete compatibility with virtually all professional equipment.
- Phase switches on all input channels reverse XLR input polarity without rewiring or adapters.
- Switchable Pads and Gain controls on all channels allow channel sensitivity to be set to accept microphones, electrical instruments, or output from nearly any signal processing equipment; peak LED's indicate proper settings.
- 8 different monitor mixes via 8 program busses; plus 2 additional busses provided by auxiliary sends, useful for patching echo or externally processed signals, feeding a tape deck, or as additional outputs.
- Insert patches on all input channels and master busses for maximum system flexibility.
- Input equalizers offer a full 15dB of filtering in three bands with a widely variable parametric-type midrange control for even greater EQ capability without adding noise or distortion.
- VU meters on all input and auxiliary channels provide accurate indication of signal level and include built-in LED peak indicators.
- Communication and Talkback modules give total communication between operator, crew, and performers.
- Channel On/Off switches allow individual channels to be turned on or killed without altering fader settings.
- Sophisticated, easy-to-use Cue system allows operator to monitor via headphones or monitor speakers all inputs, busses, output busses and effects without interrupting mix.
- Backed by the care and craftsmanship that has earned Yamaha its reputation as a manufacturer of ultra-reliable, high-performance mixing consoles.



## GENERAL SPECIFICATIONS

## Frequency Response

20Hz to 20kHz  $0 \pm \frac{1}{3}$  dB (@600 $\Omega$  + 4dB)THD < 0.05% (20Hz to 20kHz @600 $\Omega$  + 4dB)

## Noise Level\*

Equivalent Input Noise - 128dB (Rs-150 $\Omega$ )

Residual Output Noise - 95dB (balanced output)

## MASTER OUT

- 70dB MASTER fader (nominal)\*\* All input volumes (min.)\*\*

- 64dB MASTER fader (nominal)\*\* One input volume (nominal)\*\*

## AUX OUT

- 67dB AUX output volume (nominal)\*\* All AUX input volumes (min.)

- 62dB AUX output volume (nominal)\*\* One AUX input volume (nominal)\*\*

## Max. Voltage Gain

CH INPUT - MASTER OUT 76dB MASTER SUB IN - MASTER OUT 6dB

CH INPUT - AUX OUT 76dB AUX SUB IN - AUX OUT 6dB

AUX IN - MASTER OUT 12dB CUE SUB IN - CUE OUT 6dB

TALKBACK INPUT - MASTER OUT 66dB

## Equalizer Characteristics

LOW  $\pm 15$ dB (100Hz Shelving)MID  $\pm 15$ dB (350Hz to 5kHz Peaking)HIGH  $\pm 15$ dB (10kHz Shelving)

## Crosstalk (1kHz)

MIX BUSS to MIX BUSS &lt; -60dB

INPUT CH to INPUT CH &lt; -60dB

## VU Meter

MASTER 1 to 8, AUX 1.2 (0VU = +4dB)

## Peak Indicator

INPUT (Red) Lights at 3dB below clipping

VU (Red) Lights at 8dB above 0VU

## Power Requirements (Usable Voltage Range)

US &amp; Canadian Models 120V (110V to 130V), 60Hz

General Model 110V to 120V (115V  $\pm 15\%$ )/220V to 240V (230V  $\pm 15\%$ ), 50/60Hz

## Power Consumption

US &amp; Canadian Models 70W

General Model 80W

## Dimensions (W x H x D)

MC2408M 1,232mm x 185.5mm x 654.3mm (48-1/2" x 7-5/16" x 25-3/4")

MC1608M 919mm x 185.5mm x 654.3mm (36-3/16" x 7-5/16" x 25-3/4")

## Weight

MC2408M 33kg (72.6 lbs)

MC1608M 26kg (57.2 lbs)

\* Measured with a -6dB/octave LPF @12.7kHz

\*\* nominal = 6dB below max.

0dB = 0.775V RMS Specifications subject to change without notice

## INPUT SPECIFICATIONS

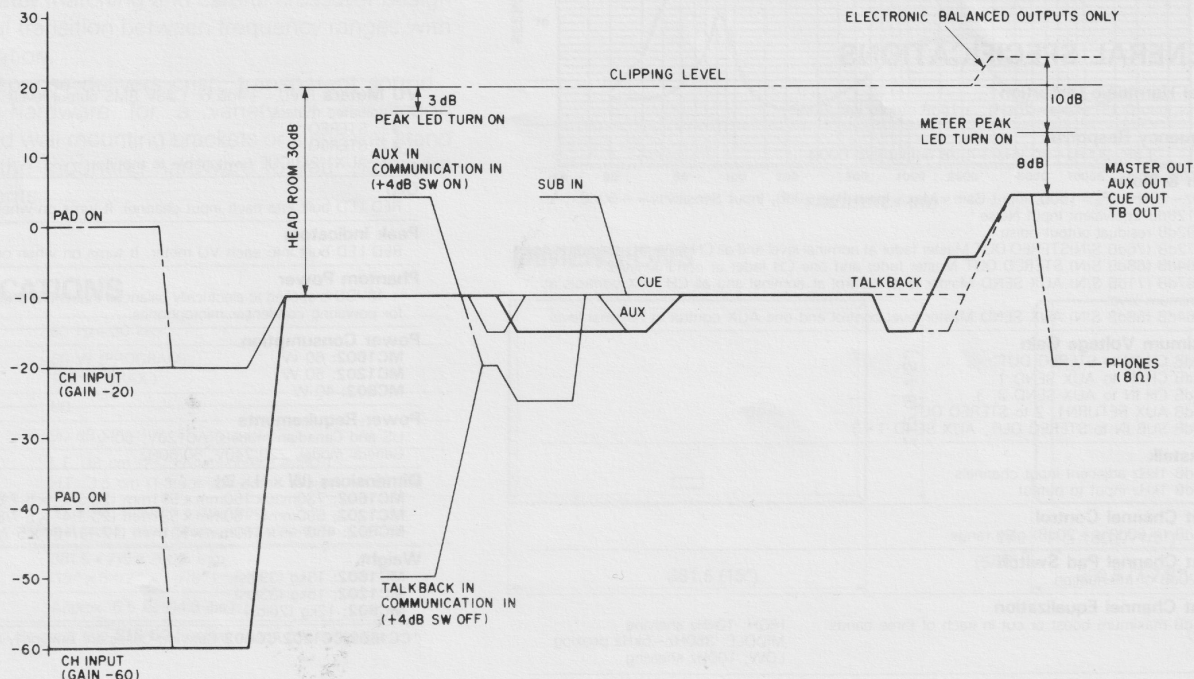
Input terminals	Input level		Input impedance	Source impedance	Sensitivity	Input level		Connector
	PAD	GAIN				Rated level	Max. non-clipping level	
CH INPUT (1 to 24)	OFF (0 dB)	-60 dB	LO Z 4 k $\Omega$	50 to 250 $\Omega$ microphones or 600 $\Omega$ lines	-72 dB (0.195 mV)	-60 dB (0.775 mV)	-30 dB (24.5 mV)	XLR type (Balanced) TRS PHONE JACK (Balanced)
		-20 dB	HI Z 10 k $\Omega$		-32 dB (19.5 mV)	-20 dB (77.5 mV)	+10 dB (2.45 V)	
	ON (20 dB)				-12 dB (195 mV)	0 dB (775 mV)	+20 dB (7.75 V)	
CH INSERT IN (1 to 24)			10 k $\Omega$	600 $\Omega$ lines	-22 dB (61.6 mV)	-10 dB (245 mV)	+20 dB (7.75 V)	Phone Jack (TRS) (Unbalanced)
MASTER INSERT IN (1 to 8)			10 k $\Omega$	600 $\Omega$ lines	-16 dB (123 mV)	-10 dB (245 mV)	+20 dB (7.75 V)	Phone Jack (TRS) (Unbalanced)
AUX IN (1, 2)			10 k $\Omega$	600 $\Omega$ lines	-8 dB (309 mV)	+4 dB (1.23 V)	+20 dB (7.75 V)	Phone Jack (Unbalanced)
SUB IN (MASTER 1 to 8, CUE, AUX 1, 2)			10 k $\Omega$	600 $\Omega$ lines	-2 dB (616 mV)	+4 dB (1.23 V)	+20 dB (7.75 V)	Phone Jack (Unbalanced)
TALKBACK IN			10 k $\Omega$	50 to 250 $\Omega$ microphones	-62 dB (0.616 mV)	-50 dB (2.45 mV)	-10 dB (245 mV)	XLR type (Unbalanced)
COMMUNICATION IN		-50 dB	10 k $\Omega$	50 to 250 $\Omega$ microphones	-62 dB (0.616 mV)	-50 dB (2.45 mV)	-10 dB (245 mV)	Phone Jack (Unbalanced)
		+4 dB	10 k $\Omega$	600 $\Omega$ lines	-8 dB (309 mV)	+4 dB (1.23 V)	+20 dB (7.75 V)	

## OUTPUT SPECIFICATIONS

Output terminals	Output impedance	Load impedance	Output level		Connector
			Rated level	Max. non-clipping level	
MASTER OUT (1 to 8)	150 $\Omega$	600 $\Omega$ lines	+4 dB (1.23 V)	+22 dB (9.76 V)	XLR type (Balanced)
AUX OUT (1, 2)	150 $\Omega$	600 $\Omega$ lines	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack (Unbalanced)
TB OUT	150 $\Omega$	600 $\Omega$ lines	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack (Unbalanced)
CUE OUT	150 $\Omega$	600 $\Omega$ lines	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack (Unbalanced)
CH INSERT OUT (1 to 24)	100 $\Omega$	10 k $\Omega$ lines	-10 dB (245 mV)	+20 dB (7.75 V)	Phone Jack (TRS) (Unbalanced)
MASTER INSERT OUT (1 to 8)	600 $\Omega$	10 k $\Omega$ lines	-10 dB (245 mV)	+20 dB (7.75 V)	Phone Jack (TRS) (Unbalanced)
PHONES OUT	100 $\Omega$	8 $\Omega$ phones	1mW	20mW	STEREO Phone Jack (Unbalanced)
		40 $\Omega$ phones	3mW	130mW	

\* Input level required to produce rated +4 dB output level. 0 dB = 0.775 V

## LEVEL DIAGRAM



# MC1602/1202/802

## MIXING CONSOLES



MC802

- *Light and compact professional mixing consoles in 8-, 12-, and 16-input configurations.*
- *Maximized convenience with exceptionally high sound quality and performance.*
- *Slim and elegant design with bright, easy-to-read controls.*

### FEATURES

- Electronically balanced inputs providing both Hi-Z phone jacks and Lo-Z XLR connectors for complete compatibility with all line- and microphone-level sources.
- A 20 dB PAD switch as well as a continuously variable GAIN control for precise input level matching.
- Three independent auxiliary sends on each channel, with corresponding AUX Master section, for maximum flexibility in stage monitoring and multiple effects applications.
- Each channel equipped with 3-band, 15-dB cut/boost equalizers with a sweepable midrange control from 350 Hz to 5 kHz.
- Comprehensive talkback system allows communication with audience or performers over any one of the AUX outputs or the main stereo mix.
- Highly practical channel insert jack, functioning for both send and return over a single TRS phone jack, on each input channel for running separate signal processing effects.

- Extensive headphone cue system for effective troubleshooting and input checking. CUE switches access the pre-fader signal of any channel, the AUX sends, or the stereo outputs.
- Variable pan control on each channel and separate left and right master output faders.
- Peak LED's on each input channel light when the post-EQ signal reaches within 3 dB of clipping.
- Three illuminated VU meters with LED peak indicators. The Stereo L and R output meters show the level of the stereo mix while the AUX/CUE meter can be switched to display the AUX sends 1-3 or the CUE signal levels.
- Phantom power supply of +48 volts DC for powering condenser microphones and direct boxes.
- Stylish sleek design with attractive gray matte finish and bright, color-coded control knobs for ease in distinguishing control functions.

### GENERAL SPECIFICATIONS

#### Total Harmonic Distortion

Less than 0.1% 20Hz~20kHz, +14dB output into 600Ω

#### Frequency Response

+1, -3 dB; 20 Hz~20 kHz +4 dB output into 600Ω

#### Hum & Noise

(20Hz~20kHz,  $R_s = 150\Omega$ , Input Gain = Max., Input Pad = 0dB, Input Sensitivity = -60dB)  
 - 128dB Equivalent Input Noise  
 - 92dB residual output noise  
 - 72dB (76dB S/N) STEREO OUT Master fader at nominal level and all CH fader at minimum level  
 - 64dB (68dB S/N) STEREO OUT Master fader and one CH fader at nominal level  
 - 67dB (71dB S/N) AUX SEND Master level control at nominal and all CH AUX controls at minimum level  
 - 64dB (68dB S/N) AUX SEND Master level control and one AUX control at nominal level

#### Maximum Voltage Gain

84dB CH IN to STEREO OUT  
 84dB CH IN to AUX SEND 1  
 94dB CH IN to AUX SEND 2, 3  
 20dB AUX RETURN 1, 2 to STEREO OUT  
 10dB SUB IN to STEREO OUT, AUX SEND 1-3

#### Crosstalk

60dB 1kHz adjacent input channels  
 60dB 1kHz input to output

#### Input Channel Control

40dB (-60dB ~ -20dB) gain range

#### Input Channel Pad Switch

0/20dB of attenuation

#### Input Channel Equalization

±15dB maximum boost or cut in each of three bands

HIGH: 10kHz shelving  
 MIDDLE: 350Hz~5kHz peaking  
 LOW: 100Hz shelving

#### VU Meters (0VU = +4dB or 1.23V RMS output level)

3 illuminated meters

#1: STEREO

#2: STEREO

#3: AUX1/2/3/CUE (switchable to monitor)

#### Clip

RED LED built into each input channel. It turns on when post-EQ signal is 3dB below clipping.

#### Peak Indicators

RED LED built into each VU meter. It turns on when output signal reaches +14dB.

#### Phantom Power

+48VDC is applied to electrically balanced inputs (via 6.8k ohms current limiting/isolation resistors) for powering condenser microphones.

#### Power Consumption

MC1602: 60 W

MC1202: 50 W

MC802: 40 W

#### Power Requirements

US and Canadian models: AC120V, 60Hz

General model: 220/240V, 50/60Hz

#### Dimensions (W×H×D)

MC1602: 730mm×150mm×531mm (28-3/4"×5-7/8"×20-7/8")

MC1202: 590mm×150mm×531mm (23-1/4"×5-7/8"×20-7/8")

MC802: 450mm×150mm×531mm (17-11/16"×5-7/8"×20-7/8")

#### Weight

MC1602: 18kg (39lbs)

MC1202: 15kg (33lbs)

MC802: 12kg (26lbs)

\* CC1602/CC1202/CC802 Carrying Cases are optionally available.



## INPUT SPECIFICATIONS

Input terminals	PAD	Gain trim	Actual load impedance	For use with nominal	Input level			Connector in mixer
					Sensitivity	Nominal	Max. before clip	
CH input*	0	-60	4k $\Omega$	50~600 $\Omega$ mics & 600 $\Omega$ lines	-80dB (0.08mV)	-60dB (0.8mV)	-34dB (15.5mV)	XLR-3-31 type & Phone Jack (TRS)
	0	-20			-40dB (7.75mV)	-20dB (77.5mV)	+6dB (1.55V)	
	20				-20dB (77.5mV)	0dB (775mV)	+26dB (15.5V)	
AUX RETURN (1, 2) stereo			10k $\Omega$	600 $\Omega$ lines	-16dB (123mV)	+4dB (1.23V)	-	Phone Jack
INSERT IN CH (1 - *)			10k $\Omega$	600 $\Omega$ lines	-26dB (38.8mV)	-6dB (388mV)	+20dB (7.75V)	Phone Jack (TRS)
SUB IN STEREO (L, R) AUX (1-3)			10k $\Omega$	600 $\Omega$ lines	-6dB (388mV)	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
TALK BACK IN			4k $\Omega$	50~600 $\Omega$ lines	-70dB (0.25mV)	-50dB (2.45mV)	-24dB (48.9mV)	XLR-3-31 type

NOTES: (1) Sensitivity is the lowest level that will produce an output of +4dB (1.23V), or the nominal output level when the unit is set to maximum gain.

(2) XLR type connectors are balanced (except TALKBACK IN), CH INSERT phone jacks are balanced (tip is hot, ring is cold, sleeve is ground) and another phone jacks are unbalanced.

(3) In these specifications, when dB represents a specific voltage, 0dB is referenced to 0.775V RMS.

(4) \* MC1602 has 16 input channels, MC1202 has 12 input channels, and MC802 has 8 input channels.

## OUTPUT SPECIFICATIONS

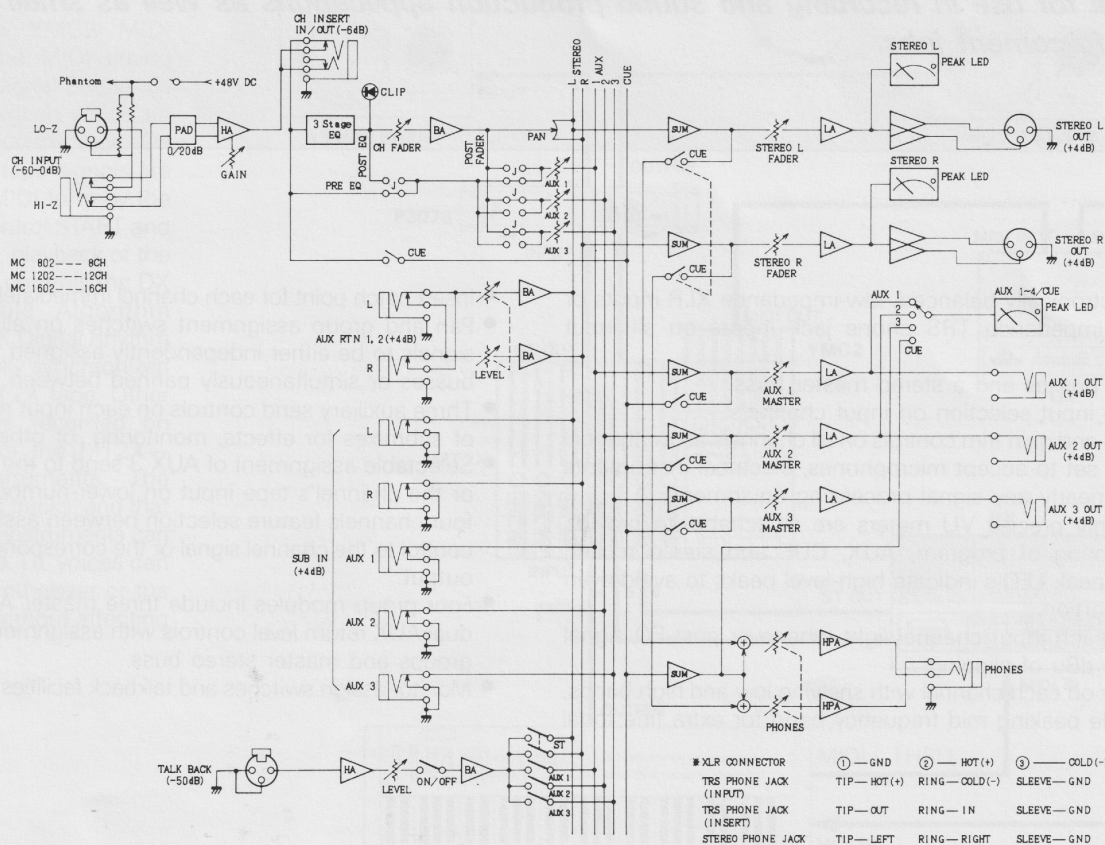
Output terminals	Actual source impedance	For use with nominal	Output level		Connector in mixer
			Nominal	Max. before clip	
STEREO OUT (L, R)	150 $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+24dB (12.3V)	XLR-3-32 type
AUX OUT (1-3)	150 $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
INSERT OUT CH (1 - *)	600 $\Omega$	10k $\Omega$ lines	-6dB (388mV)	+20dB (7.75V)	Phone Jack (TRS)
PHONES OUT	100 $\Omega$	8 $\Omega$ phones	1mW	20mW	STEREO Phone Jack
		40 $\Omega$ phones	3mW	130mW	

NOTES: (1) XLR type connectors are balanced, phone jacks are unbalanced. INSERT phone jack (tip is output, ring is input, sleeve is ground).

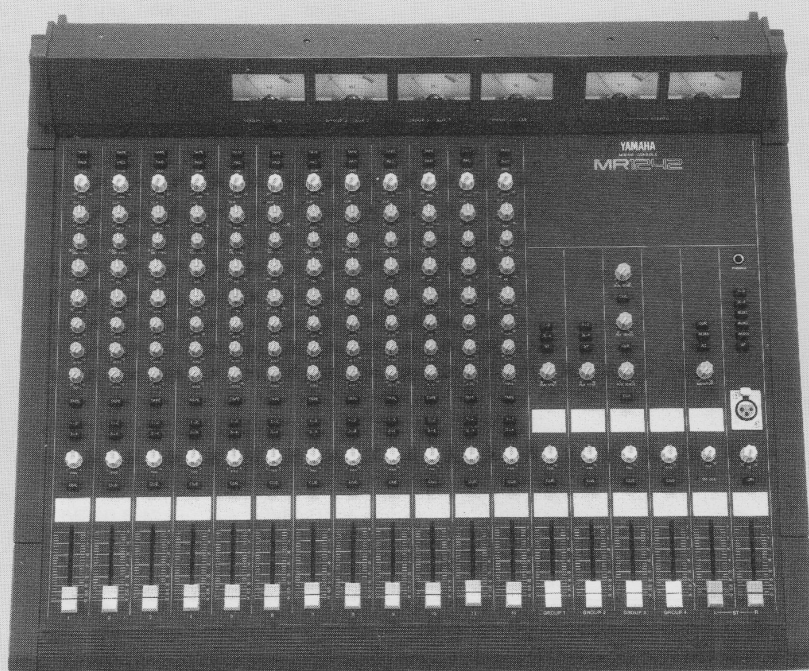
(2) In these specifications, when dB represents a specific voltage, 0dB is referenced to 0.775V RMS.

(3) \* MC1602 has 16 input channels, MC1202 has 12 input channels, MC802 has 8 input channels.

## BLOCK DIAGRAM



# MR1642/1242/842

**MIXING CONSOLES****New Product**

MR1242

- *High-quality mixing consoles with 8, 12, or 16 inputs.*
- *Wealth of features and versatile signal routing capability.*
- *Ideal for use in recording and sound production applications as well as small sound reinforcement jobs.*

## FEATURES

- A choice of electronically balanced, low-impedance XLR inputs or balanced, high-impedance TRS phone jack inputs on all input channels.
- 4 group mixing busses and a stereo master buss.
- Mic/line or tape input selection on input channels.
- Switchable pads and gain trim controls on all channels allow channel sensitivity to be set to accept microphones, electrical instruments or output from nearly any signal processing equipment.
- Illuminated, highly precise VU meters are switchable to provide accurate monitoring of program, AUX, CUE and stereo mixing busses; built-in peak LED's indicate high-level peaks to avoid even momentary distortion.
- Peak LED's on each input channel light whenever post-EQ signal comes within 3 dBu of clipping.
- 3-band equalizer on each channel with shelving low and high bands, and a sweepable peaking mid frequency band for extra fine tonal control.
- Insert patch point for each channel immediately prior to the EQ stage.
- Pan and group assignment switches on all inputs allow channel signals to be either independently assigned to one of the program busses or simultaneously panned between 1 & 2 and 3 & 4.
- Three auxiliary send controls on each input module provide a range of submixes for effects, monitoring, or other applications.
- Selectable assignment of AUX 3 send to the pre-EQ channel signal or the channel's tape input on lower-numbered channels; highest four channels feature selection between assigning the AUX 3 send control to the channel signal or the correspondingly numbered group output.
- Four group modules include three master AUX send controls and dual AUX return level controls with assignment switches for the four groups and master stereo buss.
- Monitor assign switches and talkback facilities for maximum flexibility.



## GENERAL SPECIFICATIONS

## Total Harmonic Distortion

Less than 0.1%, 20 Hz~20 kHz, +14 dBu output into 600 $\Omega$ 

## Frequency Response

20 Hz~20 kHz +1, -3 dB, +4 dBu output into 600 $\Omega$ 

## Hum &amp; Noise

(20 Hz~20 kHz,  $R_s=150\Omega$ , Input pad at 0 dB, Input sensitivity at -60 dB)

- 128 dBu equivalent input noise.
- 90 dBu residual output noise.
- 73 dBu (77 dB S/N) at GROUP OUT, Master fader nominal, all channel faders minimum.
- 64 dBu (68 dB S/N) at GROUP OUT, Master fader and one channel fader nominal.
- 70 dBu (74 dB S/N) at AUX SEND, Master fader nominal, all channel AUX controls minimum.
- 64 dBu (68 dB S/N) at AUX SEND, Master fader and one AUX send control nominal.

## Maximum Voltage Gain

- 84 dB CH IN to GROUP OUT
- 94 dB CH IN to STEREO OUT
- 94 dB CH IN to AUX SEND 1
- 84 dB CH IN to AUX SEND 2-3
- 20 dB AUX RETURN 1-2 to GROUP OUT & STEREO OUT
- 10 dB SUB IN to GROUP OUT, AUX SEND 1-3

## Crosstalk

- Adjacent channel inputs -60 dB
- Input to Output -60 dB

## Input Channel Gain Control

40 dB range (-60~-20 dB), stop to stop

## Input Channel Pad Switch

0/20 dB attenuation

## Input Channel Equalization

(15 dB maximum boost or cut)

HIGH: 10 kHz (Shelving)  
MID: 350 Hz~5 kHz (Peaking)  
LOW: 100 Hz (Shelving)

## VU Meters (All meters calibrated for 0 VU=+4 dBu output)

6 illuminated meters

GROUP 1/AUX 1, GROUP 2/AUX 2, GROUP 3/AUX 3,  
GROUP 4/CUE, STEREO L/R

## Clip Indicators

LEDs for each module: CLIP (red) lights when post-EQ signal is 3 dB below clipping.

## Phantom Power

48 V DC applied to electronically balanced inputs or optional transformer-isolated inputs (via 6.8k $\Omega$  current limiting/isolation resistors).

## Power Requirements

Power requirements match local AC mains voltage and frequency in area where sold.

## Console Dimensions (W x H x D)

MR1642: 835 x 180 x 592 mm

MR1242: 695 x 180 x 592 mm

MR842: 555 x 180 x 592 mm

0 dB=0.775 Vrms

## INPUT SPECIFICATIONS

Input Terminals		PAD	Gain Trim	Actual Load Impedance	For Use with Nominal	Input Level			Connector  in Mixer
						Sensitivity	Nominal	Max. before Clip	
CH Input*	Lo-Z	0	−60	4kΩ	50 ~ 600Ω mics	−80dB (0.08mV)	−60dB (0.8mV)	−34dB (15.5mV)	XLR-3-31 type
	Hi-Z	0	−20	10kΩ	&	−40dB (7.75mV)	−20dB (77.5mV)	+6dB (1.55V)	&
		20	−20	10kΩ	600Ω lines	−20dB (77.5mV)	0dB (775mV)	+20dB (7.75V)	Phone Jack (TRS)
	TAPE IN				10kΩ	600Ω lines	−30dB (24.5mV)	−10dB (245mV)	+20dB (7.75V)
AUX RETURN (1, 2), Stereo				10kΩ	600Ω lines	−16dB (123mV)	+4dB (1.23V)	−	Phone Jack
INSERT IN	CH (1 − *)			10kΩ	600Ω lines	−26dB (38.8mV)	+4dB (1.23V)	+20dB (7.75V)	Phone Jack (TRS)
	GROUP (1 − 4)					−16dB (123mV)	−6dB (388mV)	+20dB (7.75V)	
SUB IN	GROUP (1 − 4)			10kΩ	600Ω lines	−6dB (388mV)	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
	STEREO (L, R)								
TALKBACK IN				4kΩ	50 ~ 600Ω mics	−70dB (0.245mV)	−50dB (2.45mV)	−24dB (48.9mV)	XLR-3-31 type

NOTES: (1) Sensitivity is the lowest level that will produce an Stereo output of +4dB (1.23V), or the nominal output level when the unit is set to maximum gain. (all faders and level controls are maximum position)

(2) XLR type connectors are balanced, CH Phone Jacks are balanced (T=+, R=-, S=GND) and another Phone Jacks are unbalanced.

Insert Phone Jacks are unbalanced (T=OUT, R=IN, S=GND).

(3) In these specifications, when 0dB represents a specific voltage, 0dB is referenced to 0.775 Vrms.

(4) \* MR842: 8 ch, MR1242: 12 ch, MR1642: 16 ch.

## OUTPUT SPECIFICATIONS

Output Terminals	Actual Source Impedance	For Use with Nominal	Output Level		Connector in Mixer
			Nominal	Max. before Clip	
GROUP OUT (1-4)	150 $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+24dB (12.3V)	XLR-3-32 type
	600 $\Omega$	10k $\Omega$ lines	-10dB (388mV)	+10dB (3.88V)	RCA Pin Jack x 2
STEREO OUT (L, R)	150 $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+24dB (12.3V)	XLR-3-32 type
	600 $\Omega$	10k $\Omega$ lines	-10dB (388mV)	+10dB (3.88V)	RCA Pin Jack
AUX SEND (1-3)	150 $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
INSERT OUT CH (1-*)	600 $\Omega$	10k $\Omega$ lines	-6dB (388mV)	+20dB (7.75V)	Phone Jack (TRS)
STEREO (L, R)/GROUP (1-4)					
MONITOR OUT (L, R)	600 $\Omega$	10k $\Omega$ lines	+4dB (1.23V)	+20dB (12.3V)	Phone Jack
PHONES OUT	100 $\Omega$	8 $\Omega$ phones	1 mW	20 mW	STEREO
		40 $\Omega$ phones	3 mW	130 mW	Phone Jack

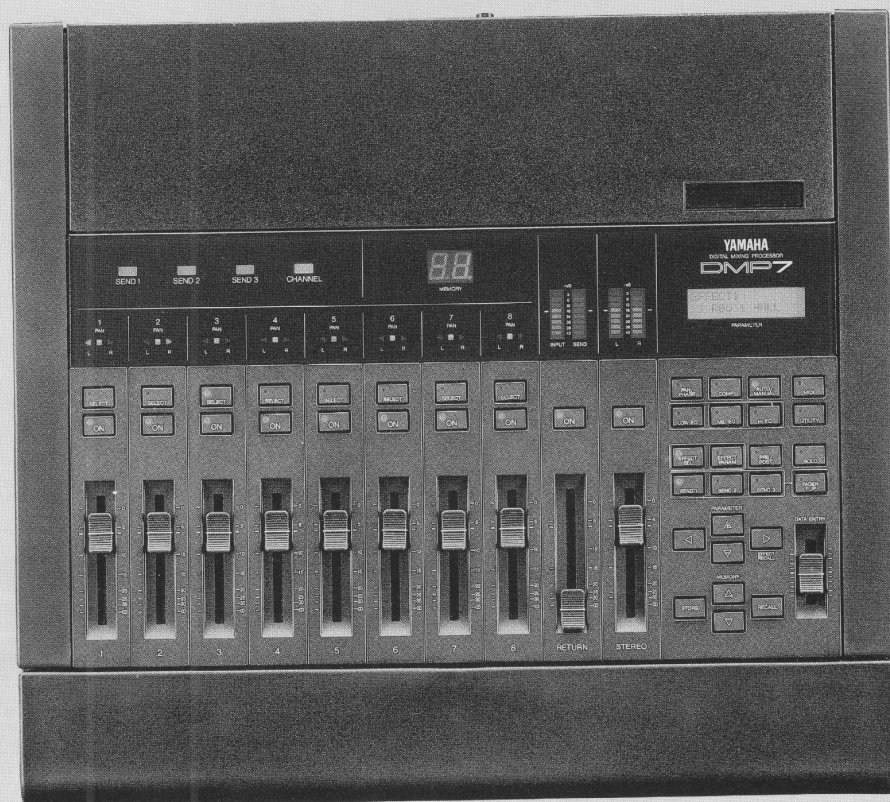
NOTES: (1) XLR type connectors are balanced, Phone Jacks and RCA Pin Jacks are unbalanced. Insert Phone jack (T=OUT, R=IN, S=GND).

(2) In these specifications, when 0dB represents a specific voltage, 0dB is referenced to 0.775 Vrms.

(3) \* MR842: 8 ch, MR1242: 12 ch, MR1642: 16 ch.

# DMP7

## DIGITAL MIXING PROCESSOR



DMP7

- **Revolutionary digital mixing console.**
- **Built-in digital effects.**
- **Totally programmable automated mixing.**

### FEATURES

- Complete digital signal processing from input to output with 16-bit resolution 44.1-kHz sampling frequency for a full 20 Hz to 20 kHz frequency response throughout the system — even in the digital effects programs.
- Reliable multi-function motorized faders, with adjustment fade time, that serve as channel level controls and effects send level controls.
- Versatile 3-band digital equalizer for fine control of any portion of the sound spectrum.
- 3 effect loops, each with a high-performance internal digital multi-effect processor. Access to external effects is provided via the effect send and return jacks on the rear panel.
- Memory storage of 30 scenes, which allow instant recall of all console parameters, plus RAM4 cartridge storage of up to 67 additional scenes on each cartridge.
- Complete MIDI control capability for complex mix automation, sequence recorder.
- Internal digital stereo compressor.
- A digital cascade interface which allows 2, 3, 4 or even more DMP7s to be coupled, providing as many input channels as necessary.
- Simple, logical panel setup using parameter keys and a data entry slider. Easy access to all internal functions.
- Solo mode for channel and effect return monitoring.
- Optional MLA7 Microphone/Line Amplifier, specifically designed to add top-quality microphone and balanced-line input capability to the DMP7.



## GENERAL SPECIFICATIONS

## ■ Analog Section

<b>Total Harmonic Distortion</b>	0.03% at +17dBu, 1kHz
<b>Frequency Response</b>	20Hz~20kHz, 0 +1, -3dB
<b>Dynamic Range</b>	88dB (STEREO OUT)
<b>Hum &amp; Noise*</b> (STEREO OUT)	-70dBu One CH fader and stereo master fader at nominal. -80dBu Stereo on key at off.
<b>Maximum Voltage Gain</b>	+36dB CH IN to STEREO OUT +30dB CH IN to EFFECTS SEND +12dB EFFECTS RETURN to STEREO OUT

## ■ Digital Section

<b>A/D, D/A Conversion</b>	Linear 16 Bit
<b>Sampling Frequency</b>	44.1kHz
<b>Program Memory</b>	Internal: 1-30 Data cartridge: 31-97

## ■ Mixing Parameters

<b>Channel Inputs</b>	Normal/Reverse
Phase	
3-band EQ	Low: 32Hz-800Hz (29 point) Mid: 250Hz-8.0kHz (31 point) High: 1.0kHz-18kHz (26 point) ±15dB (1dB step)
Frequency	0.1-5.0 (0.1 step) Peaking/Shelving (Low and High bands only) ON/OFF
Gain	ON/OFF
Q	ON/OFF
P/S	Motor-drive fader L-C-R (17 steps)
EQ	
Channel Switch	
Channel Level	
Pan	
<b>Channel/Effect Send</b>	
Channel/Effect Send 1-3	Pre/Post level (2nd function of motor-drive channel faders)
<b>Effect Master</b>	
Effect Send 1-3	Effect select; Effect parameter set
Effect Return 1-3	Level (motor-drive fader) ON/OFF
<b>Stereo Master</b>	
Stereo Out Level	Motor-drive fader
Stereo Out Switch	ON/OFF
Compressor	ON/OFF, Ratio

## ■ Functions

## Utility Functions

MEMORY PROTECT, EDIT TITLE, FADE TIME SET, RAM CARTRIDGE INITIALIZE, D. ENTRY & F. Vol exchange, MEMORY SAVE/LOAD, BATTERY CHECK, CH DATA COPY, FADER EDIT CH ASSIGN, PANPOT EDIT CH ASSIGN, EQ EDIT CH ASSIGN

## MIDI Functions

MIDI CONTROL (Bank), MIDI PGM CHANGE, NOTE ASSIGN, CONTROL ASSIGN, CNTL & NOTE SEND/RECEIVE, MIDI ECHO BACK

## Solo

## ■ Display

Channel Input 1-8 Level	8-segment LED peak meter
Effect Send 1-8 Level	8-segment LED peak meter
Stereo Out L/R Level	Left & right channel 8-segment LED peak meters
Memory no.	2-digit 7-segment LED
Parameter Display	16-character x 2-line LCD, backlight

## ■ Rear Panel

## Connectors

Channel inputs 1-8, Effect send, Effect return L/R, Stereo out L/R, Phones, Foot volume, MIDI IN/OUT/THRU, Digital cascade IN/OUT

## Controls

Power ON/OFF, Channel gain trimmers 1-8

## ■ General

## Power Requirements

US and Canadian models: 120 (105-130) VAC, 60Hz  
General model: 110-120/220-240 VAC, 50/60Hz

## Power Consumption

US and Canadian models: 85 W  
General model: 100 W

## Dimensions (W×H×D)

480mm x 139.4mm x 435mm (18-7/8" x 5-1/2" x 17-1/8")

## Weight

10.5kg (23.1 lbs.)

## Accessories

RAM4 data cartridge x 1, Cascade cable x 1, Rack-mount bracket kit

0 dB = 0.775 V RMS

\* Hum and Noise are measured with a -6dB/oct. filter at 12.7kHz

\* **MLA7** 8-Channel Microphone/Line Amplifier is available for an extended use.

## INPUT SPECIFICATIONS

Input Terminal	GAIN	Actual load impedance	For use with nominal	Sensitivity**	Input level (at 1kHz)		Connector in console
					Nominal	Max. before clip	
CH input 1-8	-20	15kΩ	600Ω lines	-32dBu (19.5mV)	-20dBu (77.5mV)	-6dBu (388mV)	Phone Jack (TRS) (Unbalanced)
	-10			-22dBu (61.5mV)	-10dBu (245mV)	+4dBu (1.23V)	
	+4			-8dBu (309mV)	+4dBu (1.23V)	+18dBu (6.16V)	
EFFECTS RETURN (L, R)		15kΩ	600Ω lines	-8dBu (309mV)	+4dBu (1.23V)	+18dBu (6.16V)	Phone Jack (Unbalanced)

## OUTPUT SPECIFICATIONS

Output level	Actual source impedance	For use with nominal	Output level (at 1kHz)		Connector in console
			Nominal	Max. before clip	
STEREO OUT (L, R)	150Ω	600Ω lines	+4dBu (1.23V)	+18dBu (6.16V)	XLR-3-32 type (Balance)
		10kΩ lines			Phone Jack (Unbalanced)
EFFECTS SEND (L, R)	150Ω	10kΩ lines	+4dBu (1.23V)	+18dBu (6.16V)	Phone Jack (Unbalanced)
PHONE OUT	150Ω	8Ω phones	0.5mW	12mW	STEREO Phone Jack (Unbalanced)
		40Ω phones	1.7mW	42mW	

\*\* Sensitivity is the lowest level that will produce an output of +4dB (1.23V), or the nominal output level when the circuit is set to maximum gain. 0dB is referenced to 0.775V RMS.

**DMP11****DIGITAL MIXING PROCESSOR****New Product**

DMP11

- ***Rack-mount digital mixer with complete digital signal processing.***
- ***Built-in digital effects.***
- ***Totally programmable automated mixing.***

**FEATURES**

- 8-in, 2-out 4U rack-mount mixer.
- Complete digital signal processing from input to output with 16-bit conversion and 44.1-kHz sampling frequency for a full 20 Hz to 20 kHz frequency response throughout the system – even in the digital effects programs.
- Increased dynamic range and lower total harmonic distortion.
- Versatile 2-band digital equalizer for fine control of any portion of the sound spectrum.
- 2 effect loops, each with a high-performance internal digital multi-effect processor. Access to external effects via the effect send and return jacks on the rear panel.
- Memory storage of 96 scenes, which allow instant recall of all console parameters.
- Complete MIDI control capability for complex mix automation via MIDI sequencers.
- Internal digital stereo compressor.
- A digital cascade interface which allows 2, 3, 4 or even more DMP11s to be connected, providing as many input channels as necessary.
- Simple, logical panel setup, using parameter keys and a data entry slider, for extreme ease in programming all internal functions.
- Solo mode for channel and effect return monitoring.



## GENERAL SPECIFICATIONS

<b>Analog Section</b>	
Total Harmonic Distortion	Less than 0.015%, Stereo out, at +17 dB, 1 kHz
Frequency Response	20 Hz~20 kHz, +1, -3 dB
Dynamic Range	92 dB at Stereo out
Hum & Noise (Stereo out)	-74 dB, one input fader and stereo fader at nominal. -80 dB, stereo off
Maximum Voltage Gain	36 dB, channel in to stereo out 30 dB, channel in to effect send
<b>Digital Section</b>	
A/D, D/A Conversion	16-bit linear
Sampling Frequency	44.1 kHz
Internal Program Memory	1-96
<b>Channel Input Controls</b>	
Gain	+4~-20 dB (-10 dB center detent, rear panel)
Phase	Normal/Reverse
2-band EQ	EQ ON/OFF
Frequency	LOW: 32 Hz~18 kHz, 56 steps HIGH: 32 Hz~18 kHz, 56 steps LOW/HIGH: $\pm 15$ dB, 1-dB steps LOW/HIGH: 0.1~5.0, 0.1 increments LOW/HIGH: Peaking/Shelving/Dynamic
Q	ON/OFF
Type	Channel/SEND 1/SEND 2
Channel ON/OFF	SEND 1/SEND 2
Fader Functions	L-C-R (17 positions)
Pre/Post	Sin 1: F=50 Hz~10 kHz, 8 steps Sin 2: F=262 Hz~523 Hz, 8 steps Saw: F=262 Hz~523 Hz, 8 steps Pink (pink noise)
Oscillator	
<b>Effect Return Controls</b>	
Return ON/OFF	Return 1 ON/OFF, Return 2 ON/OFF
Return Fader	Return 1/Return 2
Effects	
EFFECT 1:	1. REV 1 HALL/2. REV 2 ROOM/3. REV 3 VOCAL/4. REV 4 PLATE/5. FLANGE A/6. FLANGE B/7. CHORUS A/8. CHORUS B/9. PHASING/10. TREMOLO/11. SYMPHONIC/12. EARLY REF. 1/13. EARLY REF. 2/14. GATE REVERB/15. REVERSE GATE/16. DELAY L&R/17. STEREO ECHO/18. PITCH CHANGE A/19. PITCH CHANGE B/20. PITCH CHANGE C
EFFECT 2:	1. STEREO ECHO/2. FLANGE/3. CHORUS/4. PHASING/5. PANPOT

<b>Stereo Master Controls</b>	
	Stereo ON/OFF Stereo Fader
<b>Functions</b>	
	FOOT VOLUME, CHANNEL COPY, SOLO, FADE TIME, DATA ENTRY & FOOT VOLUME EXCHANGE, CASCADE LEVEL ADJUST, INPUT PATCHING, EFFECT 1 INPUT SELECT, CASCADE MODE, EFFECTS SEND SELECT, SYSTEM MODE
<b>Displays</b>	
CLIP Indicators (CH 1~8)	ON at 3 dB below clipping (pre A/D)
LED Meters	Stereo level, 7-element $\times 2$ (post D/A)
Memory Number	2-digit 7-segment LED
Parameter Display	16-character $\times 2$ -line LCD, backlit
<b>Digital Cascade</b>	
	INPUT (8-pin DIN), OUTPUT (8-pin DIN)
<b>MIDI</b>	
	IN/OUT/THRU (5-pin DIN $\times 3$ )
<b>Power Requirements</b>	
U.S. & Canadian Models:	120 V AC, 50/60 Hz
General Model:	110-120/220-240 V AC, 50/60 Hz
<b>Power Consumption</b>	
U.S. & Canadian Models:	60 W
General Model:	60 W
<b>Dimensions (W <math>\times</math> H <math>\times</math> D)</b>	
	480 $\times$ 186.8 $\times$ 286.5 mm (18-7/8" $\times$ 7-3/8" $\times$ 11-1/4")
<b>Weight</b>	
	8 kg (17 lbs 10 oz)

\* Hum & Noise are measured with a -6 dB/oct. filter at 12.7 kHz.  
\* 0 dB=0.775 Vrms

## INPUT SPECIFICATIONS

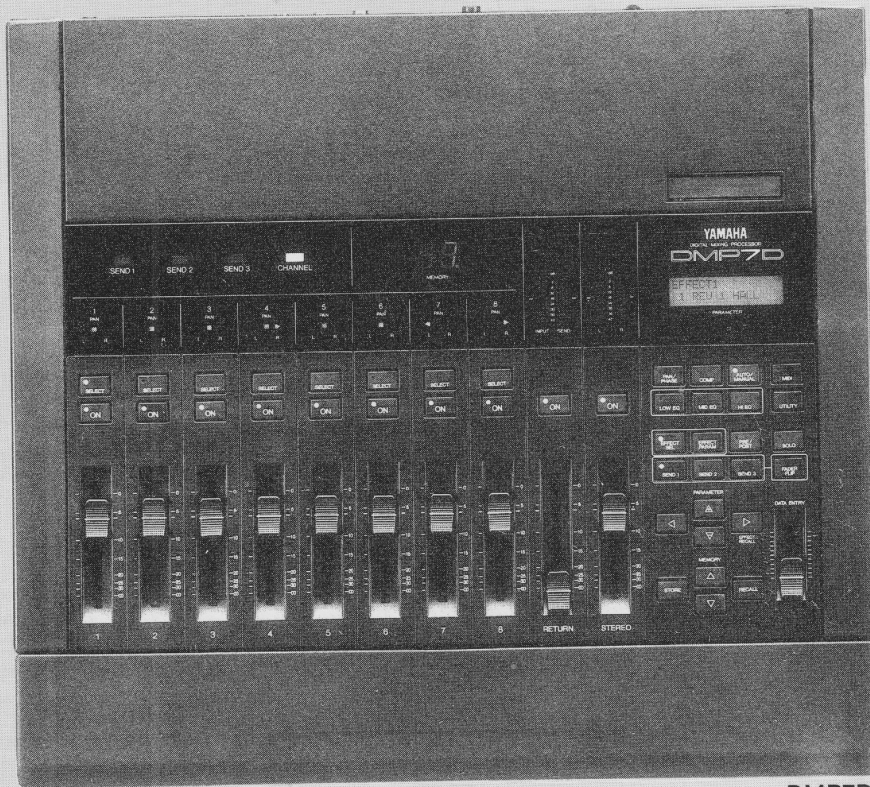
Input Terminal	GAIN	Actual load impedance	For use with nominal	Sensitivity**	Input level (at 1 kHz)		Connector in console
					Nominal	Max. before clip	
CH input 1-8	-20	15k $\Omega$	600 $\Omega$ lines	-32dBu (19.5mV)	-20dBu (77.5mV)	-6dBu (388mV)	Phone Jack (Unbalanced)
	-10			-22dBu (61.6mV)	-10dBu (245mV)	+4dBu (1.23V)	
	+4			-8dBu (309mV)	+4dBu (1.23V)	+18dBu (6.16V)	

## OUTPUT SPECIFICATIONS

Output level	Actual source impedance	For use with nominal	Output level (at 1kHz)		Connector in console
			Nominal	Max. before clip	
STEREO OUT (L, R)	150 $\Omega$	600 $\Omega$ lines	+4dBu (1.23V)	+18dBu (6.16V)	XLR-3-32 type (Balance)
		10k $\Omega$ lines			Phone Jack (Unbalanced)
EFFECTS SEND (L, R)	150 $\Omega$	10k $\Omega$ lines	+4dBu (1.23V)	+18dBu (6.16V)	Phone Jack (Unbalanced)
PHONE OUT	150 $\Omega$	8 $\Omega$ phones	0.5mW	12mW	STEREO Phone Jack (Unbalanced)
		40 $\Omega$ phones	1.7mW	42mW	

\*\* Sensitivity is the lowest level that will produce an output of +4dB (1.23V), or the nominal output level when the circuit is set to maximum gain. 0dB is referenced to 0.775V RMS.

Digital Audio Cables **YDC803** (3 m), **YDC805** (5 m), **YDC815** (15 m) are optionally available.

**DMP7D****DIGITAL MIXING PROCESSOR****New Product**

DMP7D

- *Digital mixing console for professional applications, such as mixdown of multitrack digital audio and CD mastering.*
- *All digital inputs and outputs.*

**FEATURES**

- 8-in, 2-out mixer with all-digital inputs and outputs. (Analog stereo Monitor Out and a Phones jack are provided for monitoring purposes.)
- Complete digital signal processing from input to output with 16-bit conversion and selectable 44.1- or 48-kHz sampling frequency for a full 20 Hz to 20 kHz frequency response throughout the system – even in the digital effects programs.
- Increased dynamic range and lower total harmonic distortion.
- Compatibility with all major digital interface formats (eight-channel Yamaha, Sony, or Mitsubishi) and equipped with AES/EBU and CD/DAT inputs/outputs. Stereo digital outputs (both XLR and BNC connectors) are also provided.
- Reliable multi-function motorized faders, with adjustable fade time, that serve as either channel level controls or effects send level controls.
- Versatile 3-band digital equalizer for fine control of any portion of the sound spectrum.
- 3 effect loops, each with a high-performance internal digital multi-effect processor. Access to external effects via the effect send and return jacks on the rear panel.
- Memory storage of 30 scenes, which allow instant recall of all console parameters, plus RAM4 cartridge storage of up to 67 additional settings on each cartridge.
- Complete MIDI control capability for complex mix automation via MIDI sequencers.
- Internal digital stereo compressor.
- A digital cascade interface which allows 2, 3, 4 or even more DMP7Ds to be connected, providing as many input channels as necessary.
- Simple, logical panel setup, using parameter keys and a data entry slider, for extreme ease in programming all internal functions.
- Solo mode for channel and effect return monitoring.
- Bit Shift control allows compensation for data delays (due to cable length) when the digital output of the DMP7D is returned to a multitrack recorder.



## GENERAL SPECIFICATIONS

## GENERAL

Frequency Response	0+1, -3 dB, 20 z~20 kHz
Total Harmonic Distortion	Less than 0.01% monitor out at +17 dB, 1 kHz
Dynamic Range	92 dB monitor out
Hum & Noise*	-80 dB, stereo off (monitor out)
Maximum Gain (digital)	12 dB, Ch input to stereo out 6 dB, Ch input to effects send
DA Conversion	16 bit linear
Sampling Frequency	44.1 kHz (48 kHz also available by external word clock.)
Program Memory	Internal Memory: #1~30 Data Cartridge RAM4: #31~97

## CONTROLS

Ch input CONTROLS (CH 1~CH 8)	
DIGITAL PAD	0~24 dB attenuation (0.5 dB step)
Phase	Normal/Reverse
3 stage EQ	EQ ON/OFF
Freq.	LOW: 32 Hz~800 Hz (29 positions) MID: 250 Hz~8.0 kHz (31 positions) HIGH: 1.0 kHz~18.0 kHz (26 positions)
Gain	LOW, MID, HIGH: $\pm 15$ dB (1 dB step)
Q	LOW, MID, HIGH: 0.1~5.0 (0.1 step)
P/S	LOW, HIGH: Peaking/Sheiving
CH ON	CH ON/OFF
FADER	CH FADER/SEND 1/SEND 2/SEND 3
PRE/POST	SEND 1/SEND 2/SEND 3
PAN	17 positions (L=16, R=0 to L=0, R=16)

## EFFECT RETURN CONTROLS

DIGITAL PAD	0~24 dB attenuation (0.5 dB step)
RTN ON	RTN 1 ON-OFF/RTN 2 ON-OFF/RTN 3 ON/OFF
RTN FADER	RTN 1 FADER/RTN 2 FADER/RTN 3 FADER
EFFECT SEL	
EFFECT 1, 2:	1. REV 1 HALL/2. REV 2 ROOM/3. REV 3 VOCAL/4. REV 4 PLATE/5. FLANGE A/6. FLANGE B/7. CHORUS A/8. CHORUS B/9. PHASING/10. TREMOLO/11. SYMPHONIC/12. EARLY REF. 1/13. EARLY REF. 2/14. GATE REVERB/15. REVERSE GATE/16. DELAY L & R/17. STEREO ECHO
EFFECT 3:	1. STEREO ECHO/2. FLANGE/3. CHORUS/4. PHASING/5. PAN POT/6. EXTERNAL LEQ/7. EXTERNAL MEQ/8. EXTERNAL HEQ
EFFECT PARAMETER	EFFECT 1/EFFECT 2/EFFECT 3

## STEREO MASTER CONTROLS

STEREO ON	STEREO ON/OFF
STEREO FADER COMPRESSOR	ON/OFF, RATIO

## FUNCTIONS

FOOT VOLUME, CHANNEL COPY, SOLO, FADER AUTO/MANUAL, FADE TIME SET, RAM CARTRIDGE INITIALIZE, DATA ENTRY & FOOT VOLUME EXCHANGE, BATTERY CHECK

## DISPLAYS

LED METER (CH 1~CH 8)	8-element bargraph (post EQ, pre EQ)
LED METER (SEND 1~3)	8-element bargraph
LED METERS (STEREO L/R)	2 x 8-element bargraph (pre DAC)
MEMORY NO.	2-digit, 7-segment LED
LCD	16 character x 2 line, backlit

## MONITOR LEVEL CONTROL

Monitor output level & Phones level

## ROM SELECT

44.1 kHz/48 kHz (Internal parameter select switch corresponding to sampling frequency)

## EMPHASIS ON/OFF

This switch is used when the emphasis information cannot be detected. Normally it should be OFF.

## WORD CLOCK SELECT

A/B/C	
A: DIGITAL CASCADE INPUT (DIN 8P)	
B: WORD CLOCK INPUT (BNC)	
C: DIGITAL INPUT (DSUB 25P)	

## INPUT FORMAT

Y/S/M	
Y: YAMAHA DSP-LSI FORMAT (ex. AD808)	
S: SONY FORMAT (ex. PCM3324)	
M: MITSUBISHI FORMAT (ex. X850)	

## BIT SHIFT

COARSE/FINE (SYNCHRONIZATION ADJUST for DIGITAL OUTPUT)

## MIDI

IN/OUT/THRU (3 x DIN 5P connector)

## POWER REQUIREMENTS

U.S. & Canadian models:	120 V (105~130 V) 50/60 Hz
General model:	110~120/220~240 V (115 or 230 $\pm 10\%$ ) 50/60 Hz

## POWER CONSUMPTION

U.S. & Canadian models:	60 W
General model:	60 W

## DIMENSIONS (W x H x D) 480 x 139.4 x 435 mm (18-7/8" x 5-1/2" x 17-1/8")

## WEIGHT

10.5 kg (23 lbs 2 oz)

0 dB=0.775 Vrms

\*Hum & Noise are measured with -6 dB/oct. filter at 12.7 kHz.

All phone jacks are unbalanced.

## DIGITAL INPUT SPECIFICATIONS

Input	Format	Level	Connector in Console
DIGITAL INPUT (CH1~8, BIT CLOCK, WORD CLOCK, EMPHASIS)	YAMAHA DSP-LSI	RS422 (except EMPHASIS: TTL LEVEL)	DSUB Connector 25P (FEMALE)
	SONY		
	MITSUBISHI		
DIGITAL CASCADE INPUT (STEREO L/R, WORD CLOCK)	YAMAHA DSP-LSI	RS-422	DIN Connector 8P
EFFECTS RETURN (RETURN 3 L/R)	YAMAHA DSP-LSI	RS422	DIN Connector 8P
CD/DAT INPUT (CH 7/8 auto select)	AES/EBU	0.5 Vpp/75 $\Omega$	PIN JACK
AES/EBU INPUT (CH 7/8 auto select)	AES/EBU	RS422	XLR-3-31 type
WORD CLOCK INPUT	SONY	TTL	BNC Connector

## DIGITAL OUTPUT SPECIFICATIONS

Output	Format	Level	Connector in Console
DIGITAL OUTPUT (STEREO L/R)	SONY	RS422	XLR-3-32 type x 2
		TTL	BNC Connector x 2
DIGITAL CASCADE OUTPUT (STEREO L/R, WORD CLOCK)	YAMAHA DSP-LSI	RS422	DIN Connector 8P
EFFECTS SEND (RETURN 3 L/R, WORD CLOCK)	YAMAHA DSP-LSI	RS422	DIN Connector 8P
CD/DAT OUTPUT (STEREO L/R)	AES/EBU	0.5 Vpp/75 $\Omega$	PIN JACK
AES/EBU OUTPUT (STEREO L/R)	AES/EBU	RS422	XLR-3-32 type
WORD CLOCK OUTPUT	SONY	TTL	BNC Connector

\*Interface Units **IFU1** (for X850 type), **IFU2** (for PCM3324 type), **IFU3** (for PCM1610/1630 type) and **IFU4** (Level Converter) are available for input combining and format conversion.

## ANALOG OUTPUT SPECIFICATIONS

Output Terminals	Actual Source Impedance	For Use with Nominal	Output Level (1 kHz)		Connector in Console
			Nominal	Max before Clip	
MONITOR OUT (L, R)	150 $\Omega$	10k $\Omega$ LINES	+4dB (1.23 V)	+18 dB (6.16 V)	PHONE JACK
PHONES (L, R)	150 $\Omega$	8 $\Omega$ PHONES	0.5 mV	12 mV	PHONE JACK
		40 $\Omega$ PHONES	1.7mV	42 mV	

0 dB=0.775 Vrms. All phone jacks are unbalanced.



## APPLICATION EXAMPLES

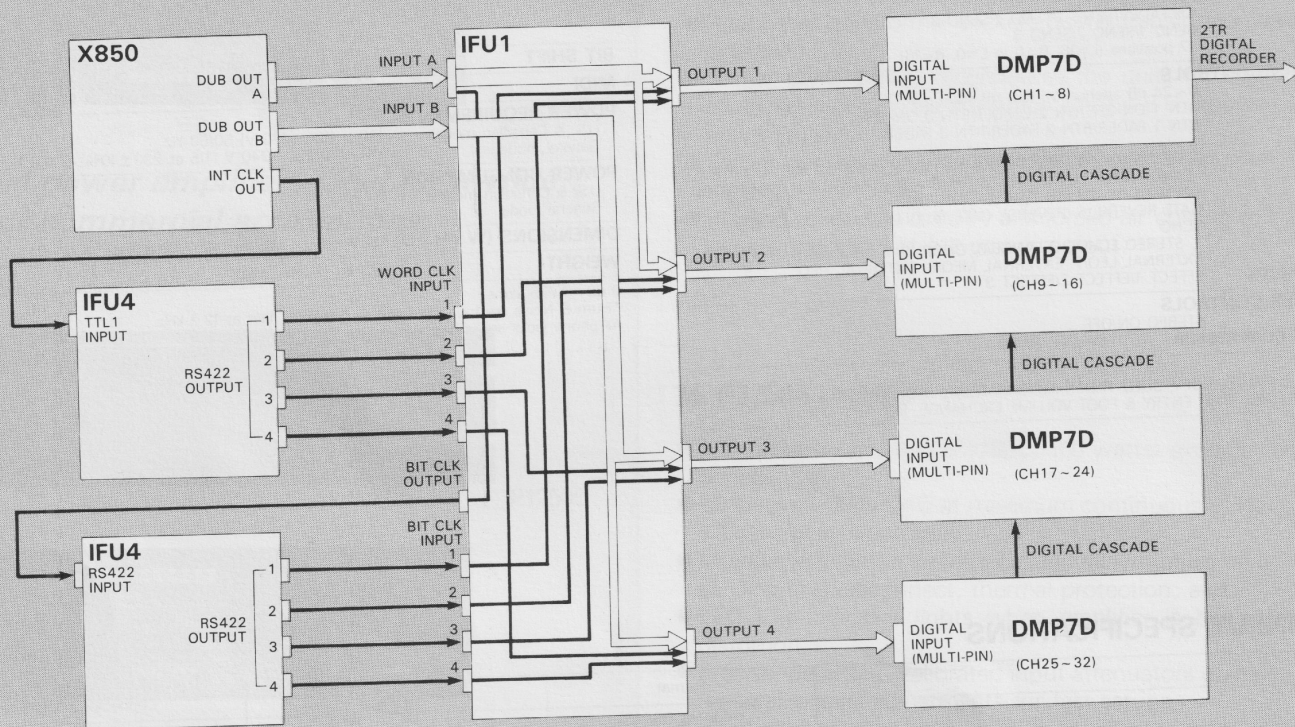
Here are four examples using interface units (IFU1, 2, 3) and a level converter (IFU4) available from Yamaha. Of course, studios are encouraged to make up interface units (with patchbays, for example)

### 1. Mixdown from Digital Multi-track

Mixing down a multitrack digital recording into a digital stereo master is an area where the DMP7D is especially suitable. Interface boxes are available for PRO-DIGI (for example Mitsubishi X850 32 track) and DASH (for example SONY PCM3324 24 track) format digital tape recorders.

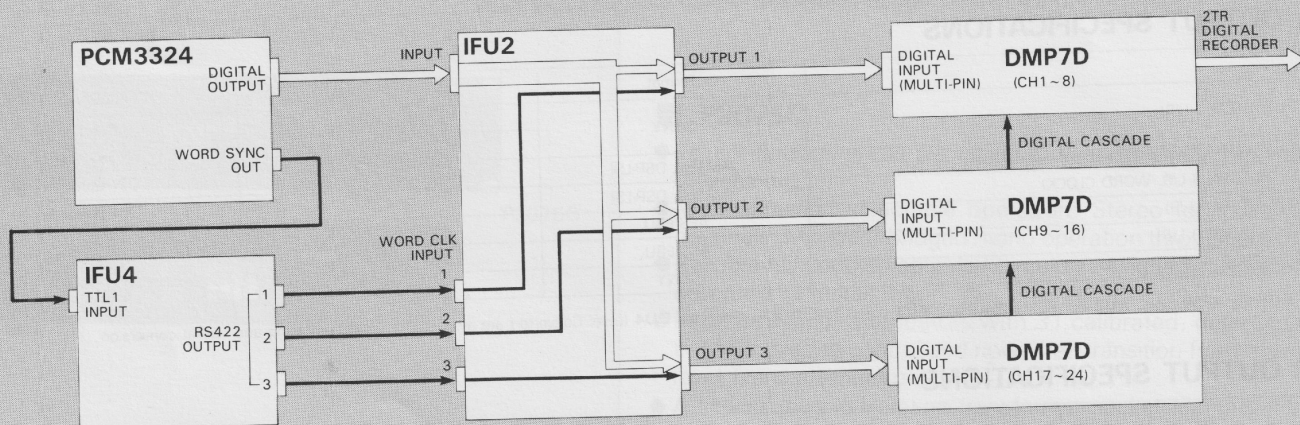
to fit their own unique needs. Technical information will be provided in the owners manual.

In this diagram, the IFU1 Interface Unit is used to distribute the 32 channels of digital audio from the X850 to four DMP7Ds. An IFU4 is used to change the X850's internal clock out from TTL to RS422 level. Another IFU4 is used distribute the X850's word clock to the four DMP7Ds.



In this diagram, the IFU2 Interface Unit is used to distribute the 24 channels of digital audio from the PCM3324 to three DMP7Ds. An

IFU4 is used to change the PCM3324's word sync output from TTL to RS422 level.



In both diagrams, the DMP7Ds are cascaded together (DIGITAL CASCADE OUT → IN), and the digital audio mix from the last DMP7D is fed to a two-track digital recorder (for example PCM1610/1630 or

DAT). From the multi-track tape to the master recording the signal remains in the digital domain.



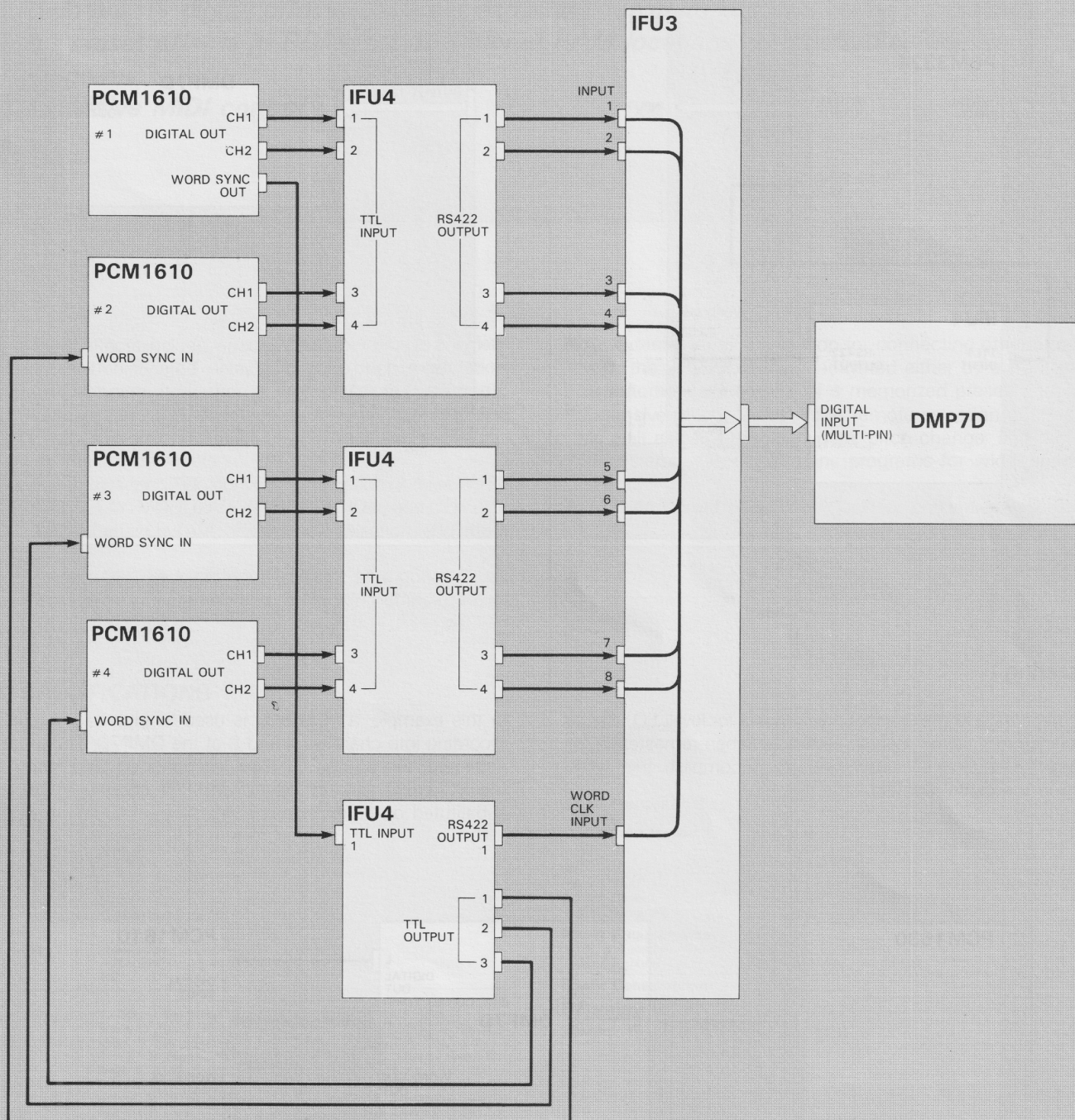
## 2. Mix Digital Stereo Source

The DMP7D's multiple digital inputs can be of great assistance when mixing down multiple digital stereo sources, as in the following example.

Two IFU4 units are used to change the PCM1610 output level from TTL to RS422, and a third IFU4 distributes the Word Sync from 1610

#1 to the other three 1610 units and also provides a RS422 level Word Clock signal to be sent to the DMP7D.

If desired, a DAT (connected to CD/DAT input) or a PCM1630 (connected to AES/EBU input) could be substituted for the fourth 1610. If either the CD/DAT IN or the AES/EBU IN are used, they take precedence over channels 7 and 8 of the multi-pin input.





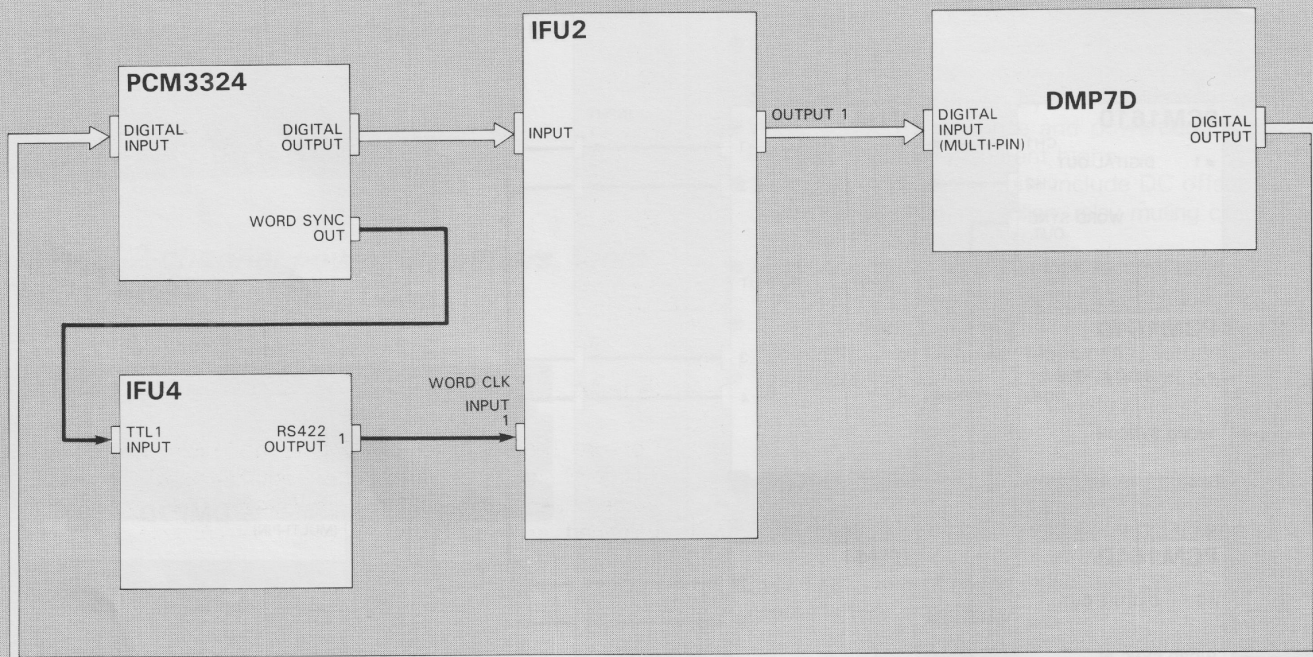
### 3. Digital Tracking Bouncing

"Bouncing" tracks is a familiar technique in multitrack recording, when several tape tracks are mixed and recorded on another track, thus freeing up the original tracks for more recording. The DMP7D allows you to bounce digital tracks while keeping them in digital form, so that there will be no degradation of the audio, thereby preserving the benefit of digital recording.

In this variation of application 1, several tracks of the PCM3324 are

being mixed to stereo and re-recorded on two tracks of the 3324 while remaining in the digital domain.

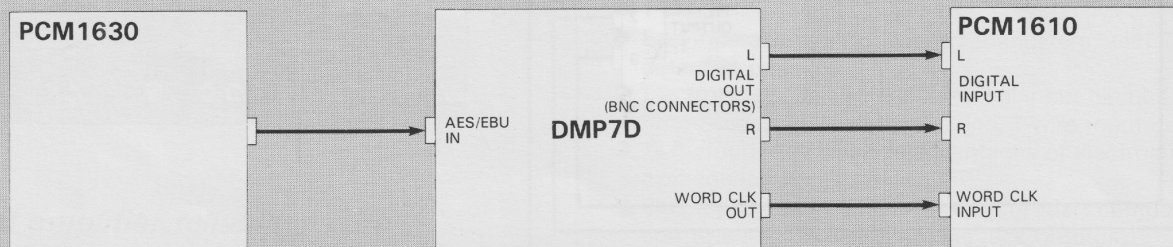
In this type of setup, it is important that the clock of the DMP7D and the 3324 be in precise synchronization. However since physical limitations of electron speed in a cable introduce a delay (6 nanoseconds/meter), we use the DMP7D's Bit Shift to adjust the delay of the returned data so the word clock to the DMP7D and data returned from it are in perfect synchronization.



### 4. Mastering

It is often necessary to make minor adjustments for level, EQ, effects or L/R balance in a stereo master, especially when remastering for a CD single. The DMP7D allows you to accomplish this while remaining in the digital domain.

In this example, a PCM1630 is used to play back a stereo digital recording into channels 7 and 8 of the DMP7D. The input signal is equalized, the volume adjusted, compressed, and finally output to the PCM1610—still in digital form. Of course, a DAT could be substituted on either side.



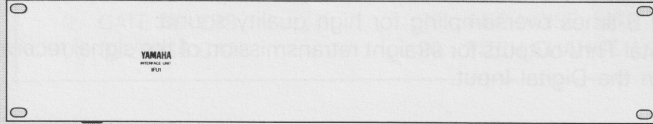


# IFU1/IFU2/IFU3/IFU4

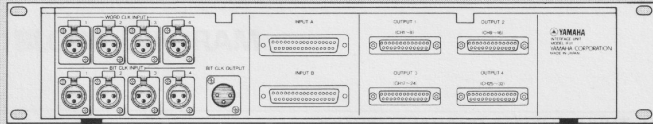
## INTERFACE UNITS

New Product

FRONT PANEL



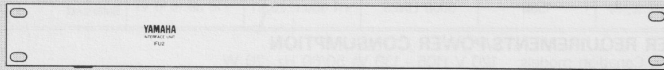
REAR PANEL



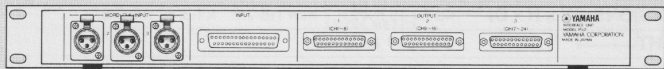
IFU1

New Product

FRONT PANEL



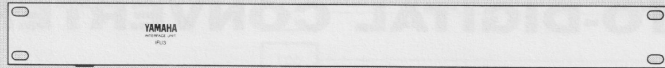
REAR PANEL



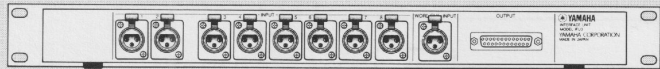
IFU2

New Product

FRONT PANEL



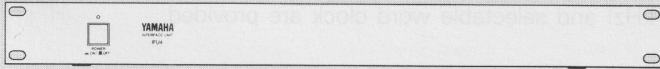
REAR PANEL



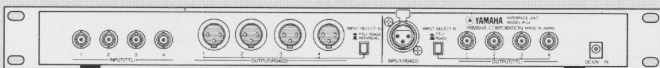
IFU3

New Product

FRONT PANEL



REAR PANEL



IFU4

- **Four rack-mount devices for transferring digital signals among various recording and signal processing equipment and the DMP7D Digital Mixing Processors.**

### FEATURES

#### ■ IFU1 (for X850 type)

Distributes the two 50-pin X850 outputs to four DMP7Ds.

#### ■ IFU2 (for PCM3324 type)

Distributes the 50-pin 3324 output to three DMP7Ds.

#### ■ IFU3 (for PCM1610/1630 type)

Combines the L and R outputs of four 1610/1630s to the multi-pin input of a DMP7D.

#### ■ IFU4 (Level Converter)

Converts (from TTL to RS422 level) and distributes clock signals. TTL level signals begin to suffer degradation when cable lengths exceed approximately 10 meters. RS422 level signals are balanced, and can safely be sent 100–200 meters.

### IFU4 SPECIFICATIONS

#### CONTROLS

Input Select A	TTL/RS422
Input Select B	INDIVIDUAL
	TTL/RS422

#### DIGITAL INPUT & OUTPUT CHARACTERISTICS

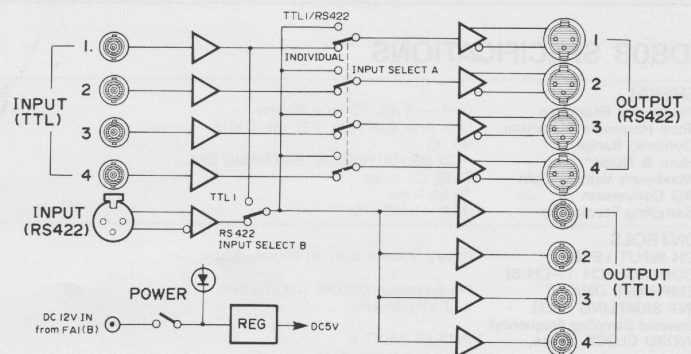
Input	Level	Connector
INPUT (TTL) 1–4	TTL	BNC Connector
INPUT (RS422)	RS422	XLR-3-31 type
OUTPUT (RS422) 1–4	RS422	XLR-3-32 type
OUTPUT (TTL) 1–4	TTL	BNC Connector

**POWER SUPPLY** DC 12V PA1(B)

**DIMENSIONS (W×H×D)** 480×45.3×217.1 mm (18-7/8"×1-3/4"×8-1/2")

**WEIGHT** 1.85 kg (4 lb 1 oz)

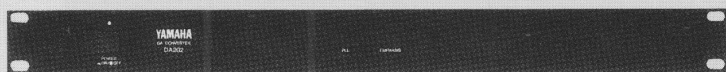
### IFU4 BLOCK DIAGRAM



## DA202

## DIGITAL-TO-ANALOG CONVERTER

New Product



DA202

High-quality D/A converter for use with the DMP7D, or any digital source.

## DA202 SPECIFICATIONS

## GENERAL

Frequency Response	0 ± 1 dB, 20 Hz ~ 20 kHz (EMPHASIS OFF)
Total Harmonic Distortion	Less than 0.01% at +17 dB, 1 kHz
Dynamic Range	110 dB
Hum & Noise*	-92 dB
DA Conversion	18 bit processing (16 bit DAC & Floating Sample/Hold) & 8 times oversampling digital filter
Sampling Frequency	44.1 kHz/48 kHz auto select
De-Emphasis	ON/OFF auto select

## CONTROLS

Input Select	AES/EBU ↔ CD/DAT
Indicators (LEDs)	POWER ON, PLL (turn on when PLL locked), EMPHASIS (turn on when De-Emphasis ON)

## DIGITAL INPUT CHARACTERISTICS

Input	Format	Level	Connector in Console
AES/EBU	AES/EBU	RS422	XLR-3-31 type
CD/DAT	AES/EBU	0.5 Vpp/75Ω	PIN JACK

## FEATURES

- Converts digital audio (AES/EBU or CD/DAT) to analog audio (balanced XLR jacks).
- State-of-the-art D/A conversion process employs 18-bit processing and 8-times oversampling for high quality sound.
- Digital Thru outputs for straight retransmission of the signal received from the Digital Input.

## DIGITAL THRU OUTPUT CHARACTERISTICS

Thru Output	Format	Level	Connector in Console
AES/EBU	AES/EBU	RS422	XLR-3-32 type
CD/DAT	AES/EBU	0.5 Vpp/75Ω	PIN JACK

## ANALOG OUTPUT CHARACTERISTICS

Output Terminals	Actual Source Impedance	For Use with Nominal	Output Level (1 kHz)		Connector in Console
			Nominal	Max before clip	
OUTPUT (L, R)	150Ω	600Ω LINES	+4 dBu (1.23 V)	+18 dB (6.16 V)	XLR-3-32 type Balanced

## POWER REQUIREMENTS/POWER CONSUMPTION

U.S. & Canadian models:	120 V (105-130 V) 50/60 Hz /20 W
General model:	220-240 V (±10%) 50/60 Hz /20 W

## DIMENSIONS (W × H × D) 480 × 45.3 × 211.7 mm (18-7/8" × 1-3/4" × 8-3/8")

## WEIGHT 3.4 kg (7 lbs 8 oz)

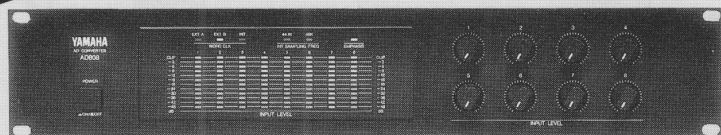
0 dB = 0.775 Vrms

\*Hum &amp; Noise are measured with -6 dB/oct. filter at 12.7 kHz

## AD808

## ANALOG-TO-DIGITAL CONVERTER

New Product



AD808

High-quality eight-channel A/D converter for use with the DMP7D.

## AD808 SPECIFICATIONS

## GENERAL

Frequency Response	0+1, -3 dB, 20 Hz ~ 20 kHz
Total Harmonic Distortion	Less than 0.01% at +17 dB, 1 kHz
Dynamic Range	90 dB
Hum & Noise*	-72 dB (DITHER ON, EMPHASIS ON)
Maximum Voltage Gain	6 dB, Ch input
AD Conversion	16 bit linear
Sampling Frequency	44.1 kHz/48 kHz

## CONTROLS

CH INPUT LEVEL	Rotary Volume with 10 degree detent
CONTROL (CH 1 ~ CH 8)	
EMPHASIS ON/OFF	Pre-Emphasis ON/OFF (All channel)
INT SAMPLING FREQ	44.1 kHz/48 kHz
(Internal Sampling Frequency)	
WORD CLOCK select	INT/EXT B/EXT A
	INT: internal clock
	EXT B: word clock input through DIGITAL OUTPUT (DSUB 25P)
	EXT A: EXT A WCLK IN (BNC)
	(on internal PCB)
Dither ON/OFF	
DISPLAYS	
LED METER	12-element bargraph
(CH 1 ~ CH 8)	(digital peak meter w/peak hold)
LED INDICATORS	WORD CLK (EXT A/EXT B/INT),
	INT SAMPLING FREQ (44.1 kHz/48 kHz), EMPHASIS

## FEATURES

- Converts analog audio from the eight balanced XLR line level inputs to Yamaha-format digital audio for direct connection to the DMP7D.
- Switchable emphasis (on/off), selectable sampling rate (44.1 kHz / 48 kHz) and selectable word clock are provided.

## DIGITAL INPUT CHARACTERISTICS

Input	Format	Level	Connector in Console
WORD CLOCK INPUT	SONY	TTL	BNC Connector

## DIGITAL OUTPUT CHARACTERISTICS

Output	Format	Level	Connector in Console
DIGITAL OUTPUT (CH 1 ~ 8, WCLK IN/OUT, EMPHASIS)	YAMAHA DSP-LSI	RS422 (except EMPHASIS; TTL LEVEL)	DSUB Connector 25P (FEMALE)

## ANALOG OUTPUT CHARACTERISTICS

Input Terminals	Actual Load Impedance	For Use with Nominal	Sensitivity	Input Level (1 kHz)		Connector in Console
				Nominal	Max before clip	
INPUT (CH 1 ~ 8)	10 kΩ	600Ω LINES	-2 dB (6.16 mV)	+4 dB (1.23 V)	+18 dB (6.16 V)	XLR-3-31 type Balanced

## POWER REQUIREMENTS/POWER CONSUMPTION

U.S. & Canadian models:	120 V (105-130 V) 50/60 Hz /60 W
General model:	220-240 V (±10%) 50/60 Hz /60 W

## DIMENSIONS (W × H × D) 480 × 99.8 × 355 mm (18-7/8" × 3-7/8" × 13-7/8")

## WEIGHT 8.0 kg (17 lbs 1 oz)

0 dB = 0.775 Vrms

\*Hum &amp; Noise are measured with -6 dB/oct. filter at 12.7 kHz.



## FMC1

## FORMAT CONVERTER

New Product



FMC1

- *Direct transfer of digital signals between digital processors.*
- *Especially designed for use with the Yamaha DMP7, DMP7D, and DMP11 Digital Mixing Processors as well as the DEQ Digital Equalizer.*
- *Compatible with most other major digital formats.*

## FEATURES

- Converts Yamaha-format digital output signal to SDIF-2, AES/EBU and CD/DAT formats.
- Connects directly with the DMP7, DMP7D, or DMP11 via its CASCADE-OUT connectors.
- SDIF-2 output consists of three BNC-type connectors (R, L and WORD CLOCK) for direct connection to SDIF-2 format digital recorders.
- AES/EBU output is transmitted via an XLR-type connector at RS422 interface level for connection to professional equipment.
- CD/DAT signals are sent through an RCA pin-jack for connection to home-use DAT and other recorders.
- A rear-panel switch allows selection of sampling frequencies of 44.1 kHz or 48 kHz, providing compatibility with equipment that operates at either frequency.

## GENERAL SPECIFICATIONS

<b>Switch</b>	
<b>SAMPLING FREQ</b>	44.1 kHz/48 kHz
<b>Power Requirements</b>	
U.S. & Canadian Models:	120 V (105 – 130 V), 50/60 Hz
General Model:	220 – 240 V (230 ± 10%), 50/60 Hz
<b>Power Consumption</b>	10 W
<b>Dimensions (W×H×D)</b>	480×45.3×217.1 mm (18-7/8"×1-3/4"×8-1/2")
<b>Weight</b>	2.5 kg (5 lbs 8 oz)

## INPUT SPECIFICATIONS

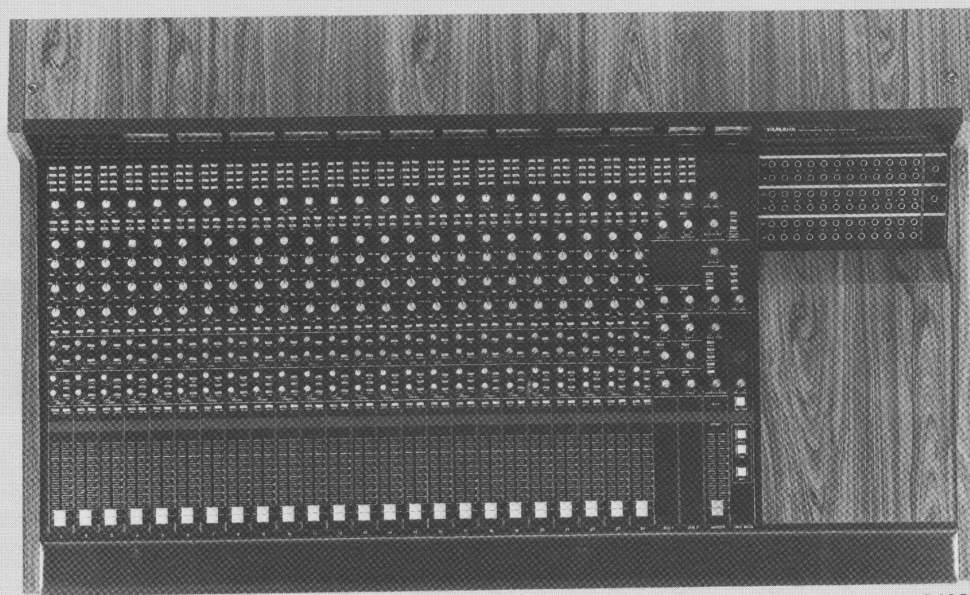
Input Connector	Format	Level	Connector Type
DIGITAL CASCADE IN	YAMAHA	RS-422	8-pin DIN Connector

## OUTPUT SPECIFICATIONS

Output Connector	Format	Level	Connector Type
DIGITAL CASCADE OUT (WORD CLK ONLY)	YAMAHA	RS-422	8-pin DIN Connector
AES/EBU OUT	AES/EBU	RS-422	XLR-3-32 type
CD/DAT OUT	AES/EBU	0.5 V <sub>pp</sub> /75Ω	RCA Pin Jack
DIGITAL OUT (R, L, WORD CLK)	SDIF	TTL	BNC Connector (×3)

# RM2408/1608

## PROFESSIONAL RECORDING CONSOLES



RM2408

■ Proven Yamaha performance in 2 superb professional recording consoles.

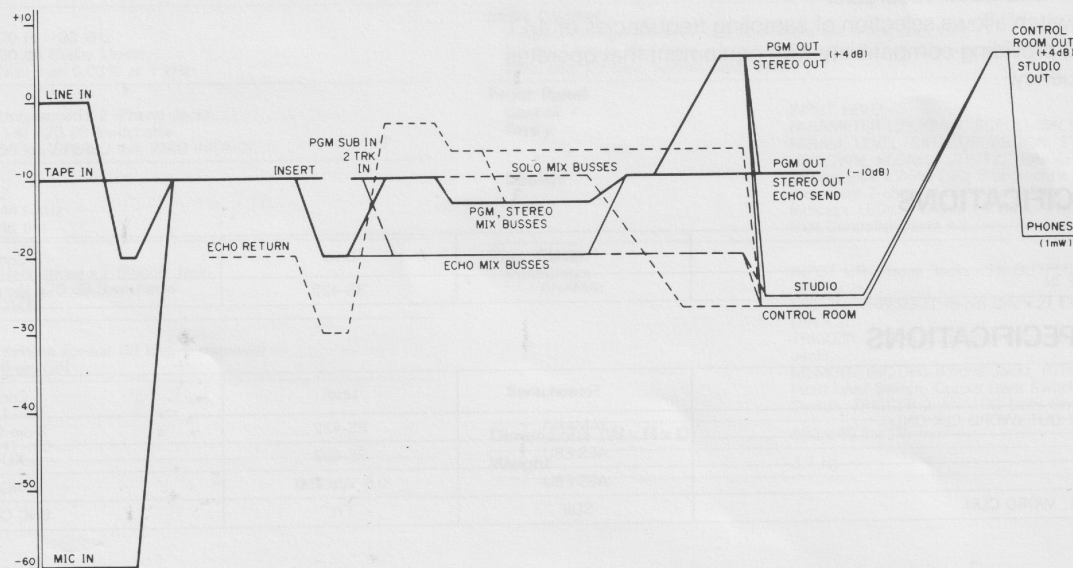
■ 16- or 24-input-by-8 mixing buss mixers ideal for use in 8-, 16- or 24-track record production.

### FEATURES

- Balanced XLR connectors, unbalanced tape inputs, and direct, post-fader outputs on all input channels.
- Phase switches on all input channels.
- Gain control on each channel adjusts input sensitivity over a 40dB range.
- 8 main program mixing busses and 2 stereo echo-cue send busses.
- Built-in high pass filter reduces frequencies below 80Hz at the rate of 12dB per octave.
- Signal On/Off switches on each channel.
- Extensive talkback system with momentary contact switch and level control.

- Sweep-type parametric equalizers on each input channel allows 15dB of boost or cut on each of 3 overlapping frequency bands; EQ bypass switch bypasses the entire equalizer for instant A/B comparisons.
- Phantom power supply has individual On/Off switches on each channel.
- Built-in patch bay utilizes standard 1/4-inch phone jacks.
- Extensive output VU metering with built-in LED's that light 6dB below clipping.
- Remote power supply for maximum reliability.

### LEVEL DIAGRAM





## GENERAL SPECIFICATIONS

**Frequency Response** +0, -3dB, 20Hz to 20kHz, +0, -0.5dB, 30Hz, to 15kHz**THD** Less than 0.1% at +4dB\* output, 20Hz to 20kHz (all faders and controls at nominal)**Hum & Noise (20Hz to 20kHz) Rs = 150Ω Input Gain "-60" \*\***

- 128dB Equivalent input noise (EIN)
- 95dB Residual output noise: all faders down.
- 80dB (84dB S/N) PGM master volume control at maximum and all CH PGM assign switches off.
- 64dB (68dB S/N) PGM master volume control at maximum and one CH fader at nominal level.
- 73dB (RM1608)
- (77dB S/N) STEREO master fader at maximum and all CH STEREO level controls at minimum level.
- 70dB (RM2408)
- (74dB S/N) STEREO master fader at maximum and all CH STEREO level controls at minimum level.
- 64dB (68dB S/N) STEREO master fader at maximum and one CH STEREO level control at nominal level.
- 80dB (RM1608)
- (70dB S/N) ECHO SEND volume at maximum and all CH ECHO volumes at minimum level.
- 76dB (RM2408)
- (66dB S/N) ECHO SEND volume at maximum and all CH ECHO volumes at minimum level.
- 75dB (65dB S/N) ECHO SEND volume at maximum and one CH ECHO volume at nominal level.

**Crosstalk**

- 70dB at 1kHz: adjacent input. -70dB at 1kHz: input to output.

**Max. Voltage Gain (Input Gain "-60")****PGM**

MIC IN to PGM OUT	74dB
TAPE IN to PGM OUT	24dB
ECHO RETURN to PGM OUT	34dB
PGM SUB IN to PGM OUT	14dB

**STEREO**

MIC IN to STEREO OUT	74dB
TAPE IN to STEREO OUT	24dB
ECHO RETURN to STEREO OUT	34dB

**ECHO C/R**

MIC IN to ECHO SEND	70dB
MIC IN to C/R OUT	74dB
2 TRK IN to C/R OUT	24dB

**STUDIO**

MIC IN to STUDIO OUT	74dB
2 TRK IN to STUDIO OUT	24dB

**Channel Equalization**

- ±15dB MAX., HIGH: 2kHz to 20kHz (peaking)
- MID: 0.35kHz to 5kHz (peaking), LOW: 50Hz to 700Hz (peaking)

**High Pass Filter** -12dB/oct. cut off below 80Hz**Talkback** Microphone, preamp, level control and push-to-talk switch, to PGM busses, STEREO busses, ECHO busses.**Oscillator** Switchable sine wave 100Hz, 1kHz, 10kHz**VU Meters** 12 illuminated meters, PGM 1 to 8, STEREO L.R (0 VU = +4dB) ECHO 1, 2 (0 VU = -10dB)**Peak Indicators**

- LED (red) built into each channel input turns on when the pre-fader level reaches 3dB below clipping. LED (red) built into each VU meter turns on when post-master fader level reaches 6dB below clipping.

**Phantom Power**

- 48 VDC is applied to XLR type connector's 2 pin and 3 pin for powering condenser microphone.

**Dimensions (W×H×D)**

- RM1608** 953mm x 279.6mm x 769mm (37-1/2" x 11" x 30-1/4")
- RM2408** 1,301mm x 279.6mm x 769mm (51-1/4" x 11" x 30-1/4")

**Weight**

- RM1608** 41kg (90.2 lbs)
- RM2408** 55kg (121.3 lbs)

\*\* Hum and Noise are measured with a -6dB/oct. filter at 12.47kHz; equivalent to a 20kHz filter with infinite dB/oct. attenuation.

\* 0dB = 0.775V RMS

**POWER SUPPLY PW1600****Power Requirements**

- US & Canadian Models 120V, 60Hz
- General Model 110 to 120/220 to 240V, 50/60Hz

**Power Consumption**

- RM1608** US & Canadian Models 120W, General Model 120W
- RM2408** US & Canadian Models 150W, General Model 150W

**Dimensions (W×H×D)** 480mm x 140mm x 300mm (18-7/8" x 5-1/2" x 11-3/4")**Weight** 8kg (17.6 lbs)**OPTIONS**

MST10 mixer stand (for RM1608), MST20 mixer stand (for RM2408)

## INPUT SPECIFICATIONS

Input terminals		Input gain	Input impedance	Source impedance	Sensitivity* (Max. gain)	Input level		Connectors Used**
						Prescribed level	Maximum non-clipping level	
INPUT	-20 Switch OFF	-60 dB	10 kΩ	50 to 250 Ω MIC	-70 dB (0.245 mV)*	-60 dB (0.78 mV)	-30 dB (24.5 mV)	XLR-3-31 Type
	-20 Switch ON	-20 dB	10 kΩ	600 Ω lines	-30 dB (24.5 mV)	-20 dB (78 mV)	10 dB (2.45 V)	
	TAPE		10 kΩ	600 Ω lines	-10 dB (245 mV)	0 dB (775 mV)	20 dB (7.75 V)	Pin Jack
ECHO RETURN (1, 2)			10 kΩ	600 Ω lines	-30 dB (24.5 mV)	-20 dB (78 mV)	20 dB (7.75 V)	Phone Jack
2 TRK IN (L, R)			10 kΩ	600 Ω lines	-20 dB (78 mV)	-10 dB (245 mV)	20 dB (7.75 V)	Pin Jack
CH INSERT IN (ch1 to 16)			10 kΩ	600 Ω lines	-10 dB (245 mV)	-10 dB (245 mV)	20 dB (7.75 V)	Phone Jack
PGM SUB IN (ch 1 to 8)			10 kΩ	600 Ω lines	-10 dB (245 mV)	-10 dB (245 mV)	20 dB (7.75 V)	Pin Jack

## OUTPUT SPECIFICATIONS

Input terminals		Output impedance	Load impedance	Output level		Connectors used
				Prescribed level	Maximum non-clipping level	
PGM OUT (CH1 to 8) A & B	4 dB	600Ω	10 kΩ lines	4 dB (1.23 V)	20 dB (7.75 V)	Phone Jack
	-10 dB	2 kΩ	10 kΩ lines	-10 dB (245 mV)	6 dB (1.55 V)	Pin Jack
STEREO OUT (L, R)	4 dB	600 Ω	10 kΩ lines	4 dB (1.23 V)	20 dB (7.75 V)	Phone Jack
	-10 dB	2 kΩ	10 kΩ lines	-10 dB (245 mV)	6 dB (1.55 V)	Pin Jack
ECHO SEND (1, 2)		600 Ω	10 kΩ lines	-10 dB (245 mV)	20 dB (7.75 V)	Phone Jack
STUDIO OUT (L, R)		600 Ω	10 kΩ lines	4 dB (1.23 V)	20 dB (7.75 V)	Phone Jack
CONTROL ROOM OUT (L, R)		600 Ω	10 kΩ lines	4 dB (1.23 V)	20 dB (7.75 V)	Phone Jack
PGM SUB OUT (CH1 to 8)		600 Ω	10 kΩ lines	-10 dB (245 mV)	20 dB (7.75 V)	Pin Jack
CH INSERT OUT (CH1 to 16)		600 Ω	10 kΩ lines	-10 dB (245 mV)	20 dB (7.75 V)	Phone Jack
CH DIRECT OUT (CH1 to 16)		600 Ω	10 kΩ lines	-10 dB (245 mV)	20 dB (7.75 V)	Pin Jack
PHONES OUT		100 Ω	8 Ω phone 40 Ω phone	1 mW 3 mW	40 mW 130 mW	STEREO Phone Jack

\* Sensitivity is the lowest level that will produce an output of -10dB.

\*\* XLR 3-31 type connector is balanced, pin and phone jacks are unbalanced.

# MV422

## MULTI-SOURCE MIXER



MV422

- **Optimum versatility and performance in a 4-input, rack-mount stereo mixer with two additional source channels for mixing of tape, CD, phono, video, and other stereo inputs.**
- **Built-in echo and Auto Mute systems.**

### FEATURES

- Switchable attenuation of -50 dB, -35 dB, or -20 dB assures optimum input level matching with a wide range of microphones and instruments.
- Separate high and low EQ, AUX send, pan and monitor level controls for each input channel.
- Two SOURCE channels permit input and mixing of various audio and A/V signals such as tape, CD, phono, video disc, VCR, and others. Video signals can be routed through the mixer on SOURCE channel 2.
- A CROSS FADE fader facilitates smooth, single-handed cross fades between the two SOURCE inputs.
- An AUTO MUTE system gives fully automatic gain riding. Amount of source attenuation, hold time, and release rate can be adjusted for comfortable operation.
- Built-in BBD echo system with adjustable feedback control for fine tuning of the degree of echo.
- 3-band master equalizer permits fine response tailoring of the entire program signal and 2 LED peak meters provide accurate visual indication of signals at the stereo master outputs.

### GENERAL SPECIFICATIONS

**THD** Less than 0.1%, 20Hz~20kHz at +14dB, MASTER OUT

#### Frequency Response

+1, -1.5dB, 20Hz~20kHz at +4dB

#### Hum & Noise

(20Hz~20kHz,  $R_L = 150\Omega$ )

- 126dB equivalent input noise (MIC 1~4, GAIN SW -50).
- 90dB residual output noise (MASTER OUT, STEREO OUT, MONO OUT)
- 80dB at MASTER, STEREO and MONO OUT with master volume at nominal level and all channel volume controls at minimum level.
- 68dB at MASTER, STEREO and MONO OUT with master fader and all channel volume controls at nominal level, GAIN SW -50.
- 94dB residual output noise (EXT. ECHO).
- 80dB at EXT. ECHO with master volume at nominal level and all channel volume controls at minimum level

#### Maximum Voltage Gain

- 66dB MIC IN (-50) to MASTER OUT
- 36dB MIC IN (-20) to MASTER OUT
- 36dB STEREO IN to MASTER OUT
- 66dB PHONO IN to MASTER OUT
- 36dB EXT. ECHO IN to MASTER OUT

#### Equalization

- 15dB maximum boost or cut in each of two bands.
- MIC IN HIGH: 3.5kHz (peaking)
- MIC IN LOW: 350Hz (peaking)

#### Crosstalk

-60dB at 1kHz

#### Level Meters

LED peak level meter displays MASTER OUT level.

#### Clip Indicators

RED LED built into each input channel. Lights when channel signal is 3-dB below clipping level.

#### Video Section

- Input Voltage: 1V p-p, 75 $\Omega$
- Output Voltage: 1V p-p, 75 $\Omega$
- Video S/N: 50dB

#### Power Requirements

- US and Canadian models: 120 V, 60 Hz
- General model: 220/240 V, 50/60 Hz

#### Power Consumption

35W

#### Dimensions (W x H x D)

480mm x 177mm x 247mm (18-7/8" x 7" x 9-3/4")

#### Weight

6.5kg (14.3 lbs)

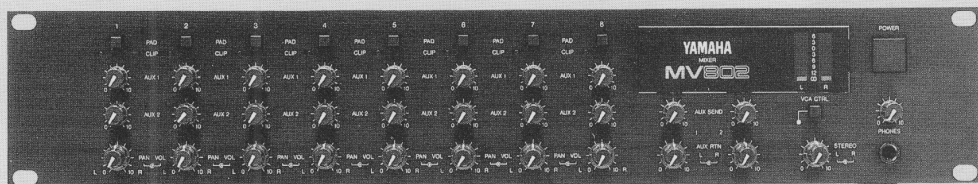
#### Supplied Accessories

Security cover and installation screws x 2



## MV802

## RACK MOUNT MIXER



MV802

■ **High versatility and superb quality in a compact 8-input, stereo-output mixer.**

■ **Remote controllability of master volume by foot pedal; flexible auxiliary busses, and expansion capability to 16-channel operation by cascading two MV802s.**

## FEATURES

- Switchable 20dB attenuation permits a broad range of input levels, including mic/line switches on channels 1 and 2 for accepting microphone-level inputs.
- VCA control of master volume level with the optional FC7 foot controller, enabling volume changes of a group of keyboards or tone generators, for example, while playing an instrument.
- Four sub input/output jacks to permit cascading of two MV802s and increase the number of available input channels to 16. A selector switch determines whether the MV802 will function as a master or slave mixer.
- 2 auxiliary send controls on each input channel allow simultaneous use of two external signal processors, such as digital reverb and delay effects.
- A stereo level meter provides accurate visual display of signal levels.
- Balanced XLR and unbalanced 1/4" phonejack stereo outputs for compatibility with virtually all amplification and mixing equipment.

## GENERAL SPECIFICATIONS

**THD** Less than 0.1%, 20Hz ~ 20kHz at +14dB into 600Ω

**Frequency Response**

+1, -1.5dB, 20Hz ~ 20kHz at +4dB into 600Ω (STEREO OUT).

**Maximum Output level**

+20dB into 600Ω at 0.2% THD, 20Hz ~ 20kHz, STEREO OUT (balanced).

**Hum & Noise**

(20Hz ~ 20kHz,  $R_s = 150\Omega$ , Input Pad at -40dB)

- 122dB equivalent input noise.
- 90dB residual output noise (STEREO OUT).
- 100dB residual output noise (AUX SEND 1, 2).
- 68dB (72dB S/N) at STEREO OUT with master fader and one channel fader at nominal level.
- 86dB (76dB S/N) at AUX SEND with master level control at nominal level and channel AUX level controls at minimum.

**Maximum Voltage Gain**

- 66dB CH IN 1, 2 (MIC) to STEREO OUT.
- 36dB CH IN 3 ~ 8 to STEREO OUT.
- 36dB AUX RETURN to STEREO OUT.
- 20dB SUB IN to STEREO OUT.

**Crosstalk** -60dB at 1kHz, adjacent input channels; -60dB at 1kHz, input to output.

**VU Meters** (0VU = +4dB Output)

2 LED bar-graph meters, STEREO OUT L, R.

**Power Requirements**

US and Canadian models: 120 V, 60 Hz  
General model: 110-120/220-240 V, 50/60 Hz

**Power Consumption** 20 W**Dimensions (W×H×D)**

480mm×88mm×243mm (18-7/8"×3-4/9"×9-1/2")

**Weight** 4.1kg (9.0 lbs)

## INPUT SPECIFICATIONS

Input	Pad	Input impedance	Source impedance	Sensitivity (Max. gain)	Input level		Connector
					Rated	Max. non-clip	
CH INPUT (CH 1, 2)	MIC	OFF	150 ~ 600Ω	-62dB (0.62mV)	-50dB (2.5mV)	-23dB (55mV)	Phone Jack
		ON	mics	-55dB (1.4mV)	-43dB (5.5mV)	-16dB (123mV)	
	LINE	OFF	600Ω lines	-32dB (19mV)	-20dB (78mV)	+7dB (1.74V)	
		ON		-12dB (195mV)	0dB (775mV)	+20dB (7.75V)	
CH INPUT (CH 3 ~ 8)	OFF	10kΩ	600Ω lines	-32dB (19mV)	-20dB (78mV)	+7dB (1.74V)	Phone Jack
	ON			-12dB (195mV)	0dB (775mV)	+20dB (7.75V)	
AUX RETURN 1, 2		20kΩ	600Ω lines	-26dB (39mV)	-20dB (78mV)	+20dB (7.75V)	Phone Jack
SUB IN (L, R, AUX 1, 2)		68kΩ	600Ω lines	-16dB (123mV)	-10dB (245mV)	+20dB (7.75V)	Phone Jack

\*\* Sensitivity is the lowest level that will produce an output of +4dB (1.23V), or the nominal output level when the unit is set to maximum gain.

## OUTPUT SPECIFICATIONS

Output	Output impedance	Load impedance	Output level		Connector
			Rated	Max. non-clip	
STEREO OUT	150Ω	600Ω lines	+4dB (1.23V)	+20dB (7.75V)	XLR-3-31 type
	600Ω	10kΩ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
AUX SEND 1, 2	600Ω	10kΩ lines	-10dB (245mV)	+20dB (7.75V)	Phone Jack
SUB OUT (L, R, AUX 1, 2)	600Ω	10kΩ lines	-10dB (245mV)	+20dB (7.75V)	Phone Jack
PHONE OUT	100Ω	8Ω headphones	-22dB (62mV)	-4.5dB (461mV)	Stereo Phone Jack

0 dB = 0.775V.

\*\* XLR connectors are balanced. All Phone Jacks are unbalanced.



# EM1800/1600/1400

## INTEGRATED MIXERS



EM1600

- *Light and compact professional powered mixing consoles in 4-, 6-, and 8-input configurations.*
- *Maximized all-in-one-unit convenience with exceptionally high sound quality and performance.*
- *Ideal for small clubs, churches, and all small sound reinforcement applications.*
- *Massive heat sinks for cool and quiet operation even during all day performances.*
- *Slim and elegant design with bright, easy-to-read controls.*

### FEATURES

- Efficient, high-power mono operation, with a built-in amplifier delivering 150 watts into 4 ohms.
- Two speaker output phone jacks as well as an accessory LINE OUT jack are provided, and a large illuminated power meter permits accurate monitoring of the master level.
- Electronically balanced inputs providing both Hi-Z phone jacks and Lo-Z XLR connectors on each channel for complete compatibility with all line- and microphone-level sources.
- A 20-dB PAD switch as well as a continuously variable GAIN control for precise input level matching.
- Built-in reverb provides natural sounding reverberation.

- Two independent auxiliary sends on each channel, with corresponding AUX Master section, for maximum flexibility in stage monitoring and multiple effects applications.
- Each channel equipped with 3-band equalizers with 15 dB of cut and boost at 100 Hz, 2 kHz, and 8 kHz.
- Six-band master graphic equalizer with front panel bypass switch. Separate in/out jacks with patch points before and after the graphic EQ allow additional external signal processing, or permit the graphic EQ to be used for other purposes.
- Stylish sleek design with attractive black matte finish and bright pastel-colored control knobs for ease in distinguishing control functions.

### GENERAL SPECIFICATIONS

#### Maximum Output Power

150 W at 4 $\Omega$ , 0.5% THD, 20Hz ~ 20kHz  
100 W at 8 $\Omega$ , 0.3% THD, 20Hz ~ 20kHz

#### Maximum Output Level

+20dB (LINE OUT) at 10k $\Omega$ , 0.5% THD, 20Hz ~ 20kHz

#### Total Harmonic Distortion

Less than 0.1%, 20Hz ~ 20kHz at 75 W/4 $\Omega$   
(POWER AMP IN to SPEAKER OUT)  
Less than 0.2%, 20Hz ~ 20kHz at +4dB/10k $\Omega$   
(CH IN to LINE OUT)

#### Hum & Noise

(20Hz ~ 20kHz,  $R_s = 150\Omega$ , Input Gain = Max., Input Pad = 0dB)

- 126dB equivalent input noise
- 64dB residual output noise (SPEAKER OUT)
- 88dB residual output noise (LINE OUT)
- 75dB (79dB S/N) LINE OUT Master fader at maximum level and all CH fader at minimum level

Input sensitivity = -60dB

- 62dB (66dB S/N) LINE OUT Master fader and one CH fader at maximum level
- 75dB (79dB S/N) AUX OUT Master fader at maximum and all CH mix level control at minimum level
- 64dB (68dB S/N) AUX OUT Master fader and one CH mix level control at maximum level

#### Maximum Voltage Gain

- 90dB CH IN to SPEAKER OUT
- 64dB CH IN to LINE OUT
- 64dB CH IN to AUX 1, 2 (+4dB) OUT
- 50dB CH IN to AUX 2 (-10dB)
- 24dB AUX RETURN to LINE OUT
- 26dB POWER AMP IN to SPEAKER OUT

#### Crosstalk

60dB 1kHz adjacent input channels.  
60dB 1kHz input to output.

#### Input Channel Gain Control

40dB (-60dB ~ -20dB) variation in gain stop to stop.

#### Input Channel Pad Switch

0/20dB of attenuation

#### Input Channel Equalization

$\pm 15$ dB maximum boost or cut in each of three bands.  
HIGH: 8kHz shelving  
MIDDLE: 2kHz shelving  
LOW: 100Hz shelving

#### VU Output Meter

Illuminated meter; +5VU = 150W, 0VU = 47W at 4 $\Omega$

#### Clip Indicators

Red LED built into each input channel. It turns on when post-EQ signal is 3dB below clipping.

#### Power Requirements

US and Canadian models: AC120V, 50/60Hz  
General model: AC110/120, 220/240V, 50/60Hz

#### Dimensions (W x H x D)

EM1800: 500mm x 150mm x 525mm (19-11/16" x 5-7/8" x 20-11/16")  
EM1600: 430mm x 150mm x 525mm (16-15/16" x 5-7/8" x 20-11/16")  
EM1400: 360mm x 150mm x 525mm (14-3/16" x 5-7/8" x 20-11/16")

#### Weight

EM1800: 20kg (44 lbs), EM1600: 15kg (33lbs), EM1400: 12kg (26 lbs)

\* Protective soft cases are optionally available.



## INPUT SPECIFICATIONS

Input terminals	PAD	Gain trim	Actual load impedance	For use with nominal	Input level			Connector in mixer
					Sensitivity	Nominal	Max. before clip	
CH input*	0	-60	4k $\Omega$	50 ~ 600 $\Omega$ lines & 600 $\Omega$ lines	-60dB (0.8mV)	-60dB (0.8mV)	-34dB (15.5mV)	XLR 3-31 type
		-20dB (77.5mV)			-20dB (77.5mV)	+6dB (1.55V)	Phone Jack (TRS)	
	20	-20			0dB (775mV)	0dB (775mV)		+26dB (15.5V)
AUX RETURN (1, 2)			10k $\Omega$	600 $\Omega$ lines	-20dB (77.5mV)	-20dB (77.5mV)	-	Phone Jack
GEQ IN			10k $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
POWER AMP IN			10k $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+4dB (1.23V)	+4dB (1.23V)	Phone Jack

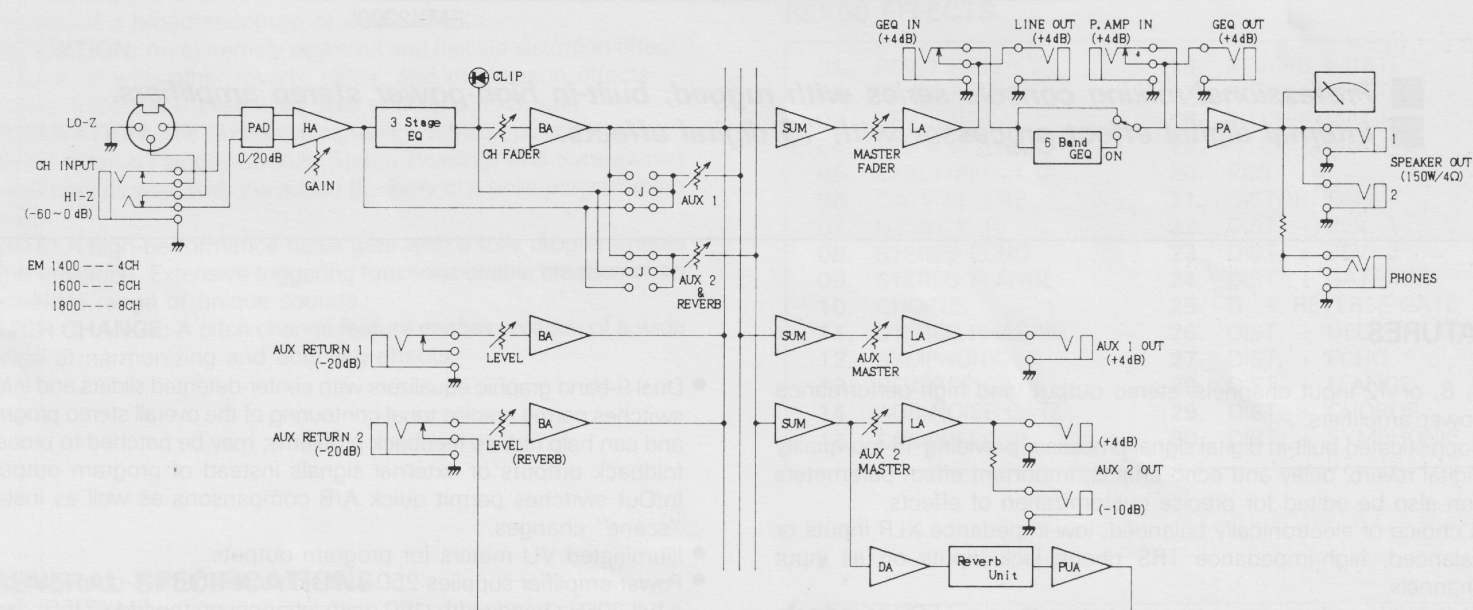
NOTES: (1) Sensitivity is the lowest level that will produce an output of full power or the nominal output level when the unit is set to maximum gain.  
 (2) XLR type connectors are balanced. CH INSERT phone jacks are balanced (tip is hot, ring is cold, sleeve is ground) and other phone jacks are unbalanced.  
 (3) \* EM1800 has 8 input channels, EM1600 has 6 input channels, EM1400 has 4 input channels.

## OUTPUT SPECIFICATIONS

Output terminals	Actual source impedance	For use with nominal	Output level		Connector in mixer
			Nominal	Max. before clip	
SPEAKER OUT	0.08 $\Omega$	8 $\Omega$ speakers	100W	100W	Phone Jack
		4 $\Omega$ speakers	150W	150W	
LINE OUT	600 $\Omega$	10k $\Omega$ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
GEQ OUT	600 $\Omega$	10k $\Omega$ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
AUX 1 OUT	150 $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
AUX 2 OUT	+4dB	150 $\Omega$	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
	-10dB	600 $\Omega$	-10dB (245V)	+6dB (1.55V)	Phone Jack
PHONES	150 $\Omega$	8 $\Omega$ phones	75mW	75mW	Stereo Phone Jack

NOTES: (1) XLR type connectors are balanced. Phone Jacks are unbalanced.  
 (2) In these specifications, when dB represents a specific voltage, 0dB is referenced to 0.775V RMS.

## BLOCK DIAGRAM



# EMX2300/2200/2150

## POWERED MIXERS

**New Product**



EMX2200

- Professional mixing console series with rugged, built-in high-power stereo amplifiers.
- Internal digital effect processor with 15 digital effects.

### FEATURES

- 6, 8, or 12 input channels, stereo output, and high-performance power amplifiers.
- Sophisticated built-in digital signal processor providing 15 top-quality digital reverb, delay and echo effects; important effect parameters can also be edited for precise customization of effects.
- A choice of electronically balanced, low-impedance XLR inputs or balanced, high-impedance TRS phone jack inputs on all input channels.
- Switchable pads and gain trim controls with peak LED's to indicate proper settings.
- 3-band equalizers on all input channels for versatile response shaping.
- Dual AUX send controls allow convenient incorporation of external effects or monitoring systems.
- Dual 9-band graphic equalizers with center-detented sliders and in/out switches permit precise tonal contouring of the overall stereo program and can help reduce feedback problems; may be patched to process foldback outputs or external signals instead of program outputs; In/Out switches permit quick A/B comparisons as well as instant "scene" changes.
- Illuminated VU meters for program outputs.
- Power amplifier supplies 250 watts/channel into a 4-ohm load over a full 20kHz bandwidth (150 watts/channel on the EMX2150); large heat sinks and forced air cooling enhance reliability.
- Stereo line outputs prior to the graphic EQ stage, direct graphic equalizer inputs and outputs, and direct inputs to the power amplifier stage.
- +48-volt phantom power for convenient powering of condenser microphones.



## GENERAL SPECIFICATIONS

## Maximum Output Power (Both channels driven)

**EMX2300/2200:** 250 W/4 $\Omega$ , 0.5% THD at 1 kHz  
160 W/8 $\Omega$ , 0.3% THD at 1 kHz  
**EMX2150:** 150 W/4 $\Omega$ , 0.5% THD at 1 kHz  
90 W/8 $\Omega$ , 0.3% THD at 1 kHz

## Total Harmonic Distortion

(POWER AMP IN to SPEAKER OUT) **EMX2300/2200:** Less than 0.1%, 20 Hz~20 kHz, 125 W output into 4 $\Omega$   
**EMX2150:** Less than 0.1%, 20 Hz~20 kHz, 75 W output into 4 $\Omega$   
Channel Input to LINE OUT Less than 0.2%, 20 Hz~20 kHz, +4 dB output into 10k $\Omega$

## Frequency Response

20 Hz~20 kHz +1, -3 dB, 1 W into 8 $\Omega$  (SPEAKER OUT)

## Hum &amp; Noise

(20 Hz~20 kHz, Rs=150 $\Omega$ , Input pad at 0 dB, Input sensitivity at -60 dB)  
-126 dBu equivalent input noise.  
-62 dBu residual output noise (SPEAKER OUT).  
-88 dB residual output noise (LINE OUT).  
-73 dBu (77 dB S/N) at LINE OUT, Master fader maximum, all channel faders minimum.  
-62 dBu (66 dB S/N) at LINE OUT, Master fader and one channel fader maximum.  
-73 dBu (77 dB S/N) at AUX SEND, Master fader maximum, all channel AUX controls minimum.  
-64 dBu (68 dB S/N) at AUX SEND, Master fader and one AUX send control maximum.

## Maximum Voltage Gain

CH IN to SPEAKER OUT **EMX2300/2200:** 92 dB, **EMX2150:** 90 dB  
CH IN to LINE OUT 64 dB  
CH IN to AUX SEND 1~2 64 dB (+4 dB)  
50 dB (-10 dB)  
AUX RETURN to LINE OUT 24 dB  
POWER AMP IN to SPEAKER OUT **EMX2300/2200:** 28 dB, **EMX2150:** 26 dB

## Crosstalk

Adjacent channel inputs -60 dB  
Input to Output -60 dB

**Input Channel Gain Control** 40 dB range (-60~-20 dB), stop to stop

**Input Channel Pad Switch** 0/20 dB attenuation

**Input Channel Equalization**  
(15 dB maximum boost or cut)  
HIGH: 8 kHz (Shelving)  
MID: 2 kHz (Peaking)  
LOW: 100 Hz (Shelving)

## Graphic Equalizer

$\pm 12$  dB maximum boost or cut in each of nine bands (L/R):  
63, 125, 250, 500, 1k, 2k, 4k, 8k, 16kHz

## Digital Signal Processor Effects

1: LARGE HALL, 2: SMALL HALL, 3: CATHEDRAL, 4: DEEP REVERB, 5: SOLO REVERB, 6: SMALL CLUB, 7: LIVE ROOM, 8: TUNNEL REVERB, 9: SLAP REVERB, A: ATTACK DELAY, B: SHORT GATE, C: PLATE ECHO, D: DOUBLER, E: MULTI-ECHO, F: STEREO ECHO

## Level Meters

2 illuminated meters **EMX2300/2200:** +5 VU=250 W/4 $\Omega$   
**EMX2150:** +5 VU=150 W/4 $\Omega$

## Clip Indicators

LEDs for each input module: CLIP (red) lights when post-EQ signal is 3 dB below clipping.  
DSP clip indicator lights when A/D signal is 3 dB below clipping.

## Phantom Power

+48 V DC applied to electronically balanced inputs or optional transformer-isolated inputs (via 6.8k $\Omega$  current limiting/isolation resistors).

## Power Requirements

Power requirements match local AC mains voltage and frequency in area where sold.

**Console Dimensions (W×H×D)** **EMX2300:** 773×220.5×600 mm

**EMX2200:** 613×220.5×600 mm

**EMX2150:** 533×220.5×600 mm

0 dB=0.775 Vrms

## INPUT SPECIFICATIONS

Input Terminals		PAD	Gain Trim	Actual Load Impedance	For Use with Nominal	Input Level			Connector in Mixer
						Sensitivity	Nominal	Max. before Clip	
CH Input* <sup>1</sup>	Lo-Z	0	-60	Lo-Z 4k $\Omega$	50~600 $\Omega$ mics	-60dB (0.8mV)	-60dB (0.8mV)	-34dB (15.5mV)	XLR-3-31 type
	Hi-Z* <sup>2</sup>	20	-20	Lo-Z 10k $\Omega$	& 600 $\Omega$ lines	-20dB (77.5mV)	-20dB (77.5mV)	+6dB (1.55V)	& Phone Jack (TRS)
AUX RTN 1, 2 (L, R)				10k $\Omega$	600 $\Omega$ lines	-20dB (77.5mV)	-20dB (77.5mV)	-	Phone Jack
CH INSERT IN* <sup>3</sup>				10k $\Omega$	600 $\Omega$ lines	-6dB (465mV)	-6dB (465mV)	+20dB (12.3V)	Phone Jack (TRS)
GEQ IN (L, R)				10k $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
POWER AMP IN (L, R)				10k $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+4dB (1.23V)	+20dB (7.75V)	Phone Jack

NOTES: (1) Sensitivity is the lowest level that will produce an output of full power or the nominal output level when the unit is set to maximum gain. (all faders and level controls are maximum position)  
(2) XLR type connectors are balanced, CH Phone Jacks are balanced (T=+, R=-, S=GND) and another Phone Jacks are unbalanced.  
(3) In these specifications, when 0dB represents a specific voltage, 0dB is referenced to 0.775 Vrms.  
(4) \*<sup>1</sup> CH No. **EMX2150:** 6 ch, **EMX2200:** 8 ch, **EMX2300:** 12 ch.  
\*<sup>2</sup> CH Hi-Z: **EMX2150:** 4 ch (CH 1~4), **EMX2200:** 4 ch (CH 1~4), **EMX2300:** 8 ch (CH 1~8)  
\*<sup>3</sup> CH INSERT IN: **EMX2150:** 2 ch (CH 5, 6), **EMX2200:** 4 ch (CH 5~8), **EMX2300:** 4 ch (CH 9~12)

## OUTPUT SPECIFICATIONS

Output Terminals		Actual Source Impedance	For Use with Nominal	Output Level		Connector in Mixer
				Nominal	Max. before Clip	
SPEAKER OUT (L, R)	EMX2150	0.08 $\Omega$	8 $\Omega$ speakers	90 W	N/A	Phone Jack
	EMX2200	0.08 $\Omega$	4 $\Omega$ speakers	150 W	N/A	Phone Jack
	EMX2300	0.08 $\Omega$	8 $\Omega$ speakers	160 W	N/A	Phone Jack
			4 $\Omega$ speakers	250 W	N/A	Phone Jack
LINE OUT (L, R)		600 $\Omega$	10k $\Omega$ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
GEQ OUT (L, R)		600 $\Omega$	10k $\Omega$ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
AUX SEND 1		150 $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
AUX SEND 2	+4dB	150 $\Omega$	600 $\Omega$ lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack
	-10dB	600 $\Omega$	10k $\Omega$ lines	-10dB (245mV)	+6dB (1.55V)	Phone Jack
CH INSERT OUT* <sup>1</sup>		600 $\Omega$	10k $\Omega$ lines	-6dB (388mV)	+20dB (7.75V)	Phone Jack (TRS)
PHONES		150 $\Omega$	8 $\Omega$ phones	75 mW	75 mW	Stereo Phone Jack

NOTES: (1) CH Insert Phone Jacks are unbalanced (T=OUT, R=IN, S=GND).  
(2) In these specifications, when 0dB represents a specific voltage, 0dB is referenced to 0.775 Vrms.  
(3) \*<sup>1</sup> **EMX2150:** 2 ch (CH 5, 6), **EMX2200:** 4 ch (CH 5~8), **EMX2300:** 4 ch (CH 9~12).

# KM802

## PORTABLE MIC/KEYBOARD MIXER



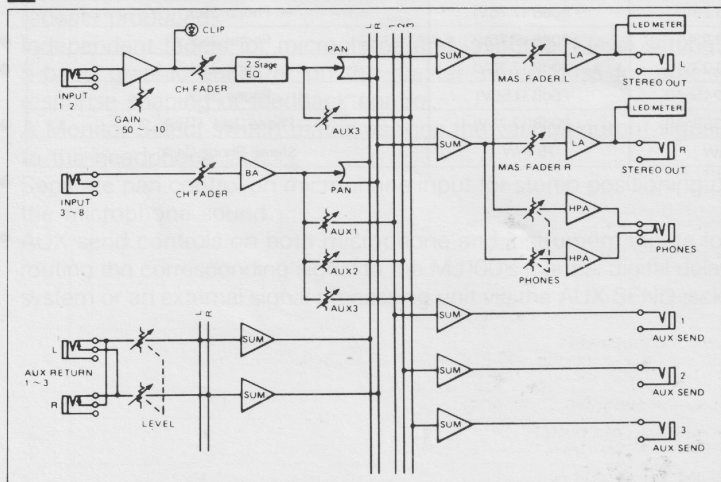
KM802

- *Light, compact mixing console ideally suited for use with multi-keyboard and effects systems.*
- *Versatile 8-input/stereo output bus configuration.*
- *Unique space-saving design with high-visibility faders.*

### ■ KM802 FEATURES

- All input channels employ standard 1/4" phone jacks for convenient connection to most musical instruments and effect units.
- Adjustable input gain on channels 1 and 2 covers a wide range of sources. Gain is adjustable from -50 dB to -10 dB, and clip LED's light when input signal reaches 3 dB below clipping level.
- High and Low frequency shelving EQ controls on channels 1 and 2 offer up to  $\pm 15$  dB equalization adjustment.
- AUX 1-AUX 3 controls on channels 3 through 8, and AUX 3 controls on channels 1, 2 send post-fader signal to corresponding Auxiliary Send busses.
- 3 Auxiliary Send jacks plus 3 left/right Auxiliary Return jacks for easy, versatile effect loop routing.
- Pan control for each input channel.
- Stereo Out LED level meters for quick, accurate analysis of overall level.
- Convenient Phones fader determines headphone output level.

### ■ KM802 BLOCK DIAGRAM



# KM602

## PORTABLE MIC/KEYBOARD MIXER



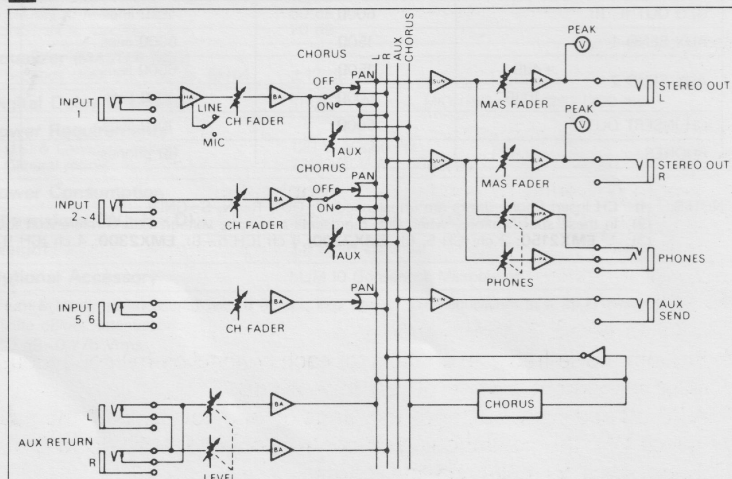
KM602

- *Lightweight, compact 6-in, 2-out mixer ideal for keyboard sub-mixing or home recording applications.*
- *Built-in stereo chorus for rich and spacious sound.*

### ■ KM602 FEATURES

- All input channels employ standard 1/4" phone jacks for convenient connection to most musical instruments and effect units.
- Switchable line/mic input gain on channel 1 allows use of nearly any input source, including microphones.
- Channels 1 through 4 equipped with built-in stereo chorus for fattening the sound without outboard effects, and individual post-fader auxiliary send controls with a master stereo auxiliary return to allow full use of outboard stereo effect units.
- Convenient color-coded fader markers for ease in visually monitoring volume settings.
- Peak indicator LED's for visual warning of clipping.
- Pan control for each input channel.
- Stereo headphone monitoring with volume control independent of master faders.

### ■ KM602 BLOCK DIAGRAM





## KM802 GENERAL SPECIFICATIONS

<b>Frequency Response</b> 10k $\Omega$ 0dB (STEREO OUT) -10dB (AUX SEND 1~3)		20Hz~20kHz (+1, -2dB)
<b>Total Harmonic Distortion</b> (20Hz~20kHz, 10k $\Omega$ , +10dB)		Less than 0.05%
<b>Hum &amp; Noise</b> (20Hz~20kHz, $R_s = 150\Omega$ , Gain = Max. (CH 1, 2))		
Input Noise (CH 1, 2)		-122dB Equivalent
Residual Output Noise (STEREO OUT)		-90dB
STEREO OUT Master fader at nominal and all CH fader at minimum		-76dB
STEREO OUT Master fader and CH 1 or 2 fader at nominal level		-72dB
AUX SEND all CH AUX level controls at minimum level		-88dB
AUX SEND CH 1 or 2 fader and AUX level control at nominal level		-82dB
<b>Crosstalk</b> (1kHz)		
Adjacent input		-60dB
Input to output		-60dB
<b>Maximum Voltage Gain</b>		
CH 1, 2 IN to STEREO OUT		62dB
CH 3~8 IN to STEREO OUT		22dB
AUX RETURN to STEREO OUT		32dB
CH 1, 2 IN to AUX SEND		68dB
CH 3~8 IN to AUX SEND		12dB
<b>CH 1, 2 Equalizer</b>		
HI: 10kHz shelving, LO: 100Hz shelving		$\pm 15$ dB maximum
<b>Power Requirements</b>		
US and Canadian models		AC110/120V, 50/60Hz
General model		AC110/120V, 220/240V, 50/60Hz
<b>Dimensions (W x H x D)</b>		
		354mm x 85mm x 303mm (13-15/16" x 3-5/8" x 11-15/16")
<b>Weight</b>		
		2.6kg (5 lbs. 7 oz.)

\* Hum & Noise are measured with 6dB/oct. filter at 12.7kHz: equivalent to a 20kHz filter with infinite dB/oct. attenuation.

\*\* 0dB is referenced to 0.775V.

\* RK802 Rack-mount Kit is optionally available.

## KM602 GENERAL SPECIFICATIONS

<b>Frequency Response</b> 10k $\Omega$ 0dB (STEREO OUT) -10dB (AUX SEND)		20Hz~20kHz ( $\pm 1$ dB)
<b>Total Harmonic Distortion</b> (20Hz~20kHz, 10k $\Omega$ , +10dB)		Less than 0.05%
<b>Hum &amp; Noise</b> (20Hz~20kHz, $R_s = 150\Omega$ , Gain = Max. (CH 1, 2))		
Input Noise (CH 1)		-118dB Equivalent
Residual Output Noise (STEREO OUT)		-90dB
STEREO OUT Master fader at nominal and all CH fader at minimum		-76dB
STEREO OUT Master fader and CH 1 fader at nominal level		-72dB
AUX SEND CH AUX level controls at minimum level		-88dB
AUX SEND CH 1 fader and AUX level control at nominal level		-82dB
<b>Crosstalk</b> (1kHz)		
AUX SEND to STEREO OUT		-60dB
Adjacent input		-60dB
<b>Maximum Voltage Gain</b>		
CH 1 IN to STEREO OUT		62dB
CH 2~6 IN to STEREO OUT		22dB
AUX RETURN to STEREO OUT		32dB
CH 1 IN to AUX SEND		52dB
CH 2~4 IN to AUX SEND		12dB
<b>Maximum Output Level</b> (20Hz~20kHz, 10k $\Omega$ , THD 0.2%)		
		+20dB
<b>Power Requirements</b>		
US and Canadian models		AC120V, 60Hz
General model		AC110/120V, 220/240V, 50/60Hz
<b>Dimensions (W x H x D)</b>		
		290mm x 65mm x 204mm (11-7/16" x 5-1/2-9/16" x 8-1/16")
<b>Weight</b>		
		1.5kg (3 lbs. 5 oz.)

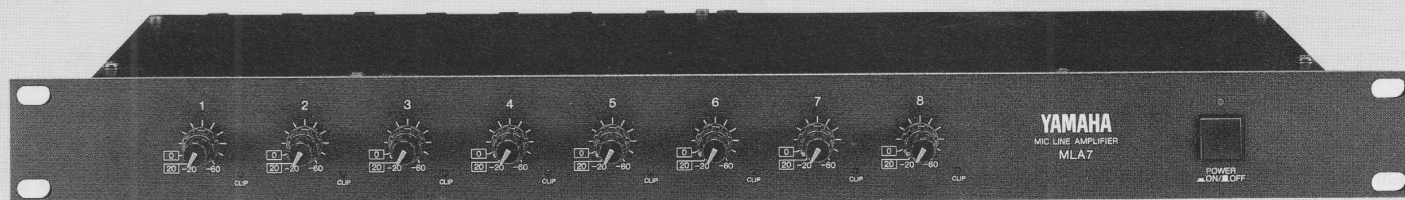
\* Hum & Noise are measured with 6dB/oct. filter at 12.7kHz: equivalent to a 20kHz filter with infinite dB/oct. attenuation.

\*\* 0dB is referenced to 0.775V.

## MIC/LINE AMPLIFIER

# MLA7

## 8-CHANNEL MIC LINE AMPLIFIER



MLA7

Professional-quality microphone and balanced-line input capability in a slim, rack-mount package.

## FEATURES

- Balanced XLR connectors on all input channels.
- Built-in 48-volt DC phantom power supply to XLR connectors for remote powering of condenser microphones.
- Standard +4 dB unbalanced phone output jacks for direct connection to the DMP7 Digital Mixing Processor, or virtually any audio equipment.
- LED peak indicators for each input channel indicate when the signal reaches within 3 dB of clipping.
- Smooth, noise-free gain controls for each channel permit continuous level adjustment from -60 dB to -20 dB.
- A 20-dB pad switch extends the range of input levels. With the pad switch ON, the continuous gain controls cover a -40 dB to 0 dB range, ideal for balanced-line inputs.

## GENERAL SPECIFICATIONS

<b>Total Harmonic Distortion</b> Less than 0.1%, 20Hz~20kHz at +4dB into 10k $\Omega$	
<b>Frequency Response</b> 0 - $\frac{1}{3}$ dB, 20Hz~20kHz at +4dB into 10k $\Omega$	
<b>Hum &amp; Noise</b> (20Hz~20kHz, 150 $\Omega$ termination)	
-128dBu equivalent input noise, PAD 0, GAIN control max.	
-87dBu equivalent input noise, PAD 20, GAIN control min.	
<b>Maximum Voltage Gain</b> 64dB CH IN to CH OUT.	
<b>Crosstalk</b> -70dB at 1kHz/10kHz, adjacent channels.	
<b>Power Requirements</b> US and Canadian models: 120 (105-130) VAC, 50/60Hz General model: 110-120/220-240 VAC, 50/60Hz	
<b>Power consumption</b> 20 W	
<b>Dimensions (W x H x D)</b> 480mm x 45.5mm x 231.6mm (18-7/8" x 1-3/4" x 9-1/8")	
<b>Weight</b> 3.25kg (7.16 lbs.)	



# MJ100

## MULTI-SOURCE MIXER



MJM-10 (Optional)

MJ100

- **Convenience, versatility, and performance in a compact multi-source mixer.**
- **Ideal for a wide range of applications, including small discos, clubs, and churches as well as home video post-production mixing of music, narration, and sound effects.**

### FEATURES

- Two main input sources, each with four rear-panel line-level stereo inputs: tape, CD, phono and auxiliary.
- Separate input selector switches for each stereo input on the two main sources.
- A cross fader facilitates smooth, single-handed cross-fades between the two source inputs.
- Built-in high-quality digital delay system with a choice of three delay times: Short (100 ms), Mid (150 ms), and Long (200 ms); a Regeneration control is also provided for controlling the number of repeats produced.
- Independent faders for microphone and instrument level setting.
- 5-band graphic equalizer on the master stereo buss for precise response shaping or feedback control.
- A Monitor Select switch matrix assigns the various output signals to the headphone jack.
- Separate pan control on microphone input for stereo positioning of the microphone sound.
- AUX send controls on both microphone and instrument inputs for routing the corresponding signal to the MJ100's internal digital delay system or an external signal processing unit via the AUX SEND jack.

### GENERAL SPECIFICATIONS

<b>Frequency Response</b>	20 Hz ~ 20 kHz, +0, -3 dB
<b>Total Harmonic Distortion</b>	Less than 0.1%, 20 Hz ~ 20 kHz at Master out 0 dB
<b>Hum &amp; Noise (20 Hz ~ 20 kHz)</b>	
Rs = 150Ω	-122 dB (EIN)
STEREO OUT	-88 dB (Master & Mic fader max.)
<b>Crosstalk (1 kHz)</b>	
Adjacent inputs	-60 dB
Input to Output	-60 dB
<b>Maximum Voltage Gain</b>	
PHONO IN to MASTER OUT	44 dB
PHONO IN to LINE OUT	34 dB
CD/TAPE/AUX IN to MASTER OUT	10 dB
AUX RETURN to LINE OUT	10 dB
MIC IN to MASTER OUT	50 dB
INST IN to MASTER OUT	20 dB
<b>Equalizer (MASTER GEO.)</b>	
5 Bands (100, 400, 1k, 3k, 8kHz)	±12 dB max.
<b>Digital Delay (3 settings)</b>	SHORT (100 ms), MID (150 ms), LONG (200 ms)
<b>Power Requirements</b>	
U.S. & Canadian models	120 V AC, 60 Hz
General model	220/240 V AC, 50/60 Hz
<b>Power Consumption</b>	13 W
<b>Dimensions (W × H × D)</b>	350 × 77 × 254 mm (13-3/4" × 3" × 10")
<b>Weight</b>	2.8 kg (6 lbs 3 oz)
<b>Optional Accessory</b>	MJM-10 Gooseneck Microphone

\* Hum & Noise are measured with 6 dB/oct. filter at 12.7 kHz; equivalent to a 20 kHz filter with infinite dB/oct. attenuation.

\*\* 0 dB = 0.775 Vrms



# REX50

## DIGITAL MULTI EFFECTOR



REX50

- *The portable REX50 offers the whole range of today's sophisticated digital effects.*
- *The world's first digital distortion effects.*
- *Full programmability and memory storage capabilities.*

### FEATURES

**REVERB:** State-of-the-art digital technology reproduces the acoustic reflections of various environments. Other reverb effects include early reflection, gate reverb, and reverse gate.

**DELAY AND ECHO:** Independently programmable right and left channel delay and echo effects with adjustable feedback allow creation of a broad spectrum of delay effects.

**DISTORTION:** An extremely powerful and flexible distortion effect, by itself or with other reverb, delay, and modulation effects — making the REX50 essentially two effects units in one.

**MODULATION:** The expressive capability of the popular modulation effects (Stereo Flange, Chorus, Stereo Phasing, and Symphonic) are all here as well, with the added flexibility of a wide programming range.

**GATE:** A high-performance noise gate with a fully programmable ADR envelope. Extensive triggering functions enable creation of an incredible range of unique sounds.

**PITCH CHANGE:** A pitch change feature enables creation of a wide range of harmonizing and doubling effects.

**COMPRESSOR:** Compression can be used to sustain sounds (such as a guitar), or smooth out the volume extremes of particularly dynamic sounds (such as vocals).

### REX50 EFFECTS

- |                    |                       |
|--------------------|-----------------------|
| 01. REV 1 HALL     | 16. REVERB & GATE     |
| 02. REV 2 ROOM     | 17. PITCH CHANGE A    |
| 03. REV 3 VOCAL    | 18. PITCH CHANGE B    |
| 04. REV 4 PLATE    | 19. PITCH CHANGE C    |
| 05. EARLY REF. 1   | 20. PAN               |
| 06. GATE REVERB    | 21. DISTORTION        |
| 07. DELAY L, R     | 22. DIST. + REV. 1    |
| 08. STEREO ECHO    | 23. DIST. + REV. 3    |
| 09. STEREO FLANGE  | 24. DIST. + GATE REV. |
| 10. CHORUS         | 25. D. + REVERSE GATE |
| 11. STEREO PHASING | 26. DIST. + DELAY     |
| 12. SYMPHONIC      | 27. DIST. + ECHO      |
| 13. REVERSE GATE   | 28. DIST. + FLANGE    |
| 14. ADR-NOISE GATE | 29. DIST. + CHORUS    |
| 15. COMPRESSOR     | 30. DIST. + SYMPHONIC |

### GENERAL SPECIFICATIONS

#### Electrical Characteristics

Effect Freq. Response	20Hz ~ 20kHz
Dynamic Range	Effect: 74dB    Direct: 80dB
Distortion	0.1% max. at 1kHz

#### Input

Number of Channels	Unbalanced x 2 (Phone Jack)
Nominal Level	-10dBm
Impedance	500kΩ
Level Control	Rotary, continuous
Level Monitor	3-segment

#### A/D, D/A Conversion

Number of Channels	1
Sampling Frequency	31.25kHz
Quantization	16 bits

#### Output

Number of Channels	Unbalanced x 2 (Phone Jack)
Nominal Level	-10dBm
Impedance	1kΩ
Mixing	Effect only, effect plus direct signal

#### Memory

Presets (ROM)	1 - 30
User Memory (RAM)	31 - 90 (Battery Backup)

#### MIDI Control

Memory selection (1 - 90) by MIDI program change number.  
MIDI triggering of programs 14 and 16.  
MIDI base key selection for program 17.

#### Front Panel

Keys: MEMORY, PARAM, ↑, ↓, STORE, RECALL, UTILITY, BYPASS  
Display: 16 char. x 2 line LCD, 2-digit 7-segment LED

#### Rear Panel

Control	LEVEL
Footswitch Jacks	BYPASS, MEMORY
INPUT/OUTPUT Jacks	1/4" monaural phone jacks
MIDI Terminals	IN
STEREO MIX Switch	ON/OFF

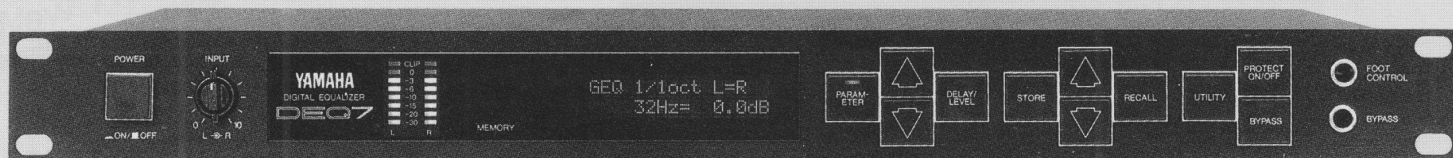
#### General

Power Supply	US & Canada: 110 - 120VAC, 15W General model: 220 - 240VAC, 15W
Dimensions (W x H x D)	274mm x 44mm x 196.2mm (10-3/4" x 1-3/4" x 7-3/4")
Weight	1.7kg (3.7 lbs.)
Optional	Foot switch FC5

## DEQ7

## DIGITAL EQUALIZER

POWERED MIXERS



DEQ7

- **Clean, precise digital equalization through advanced Yamaha digital signal processing technology.**
- **30 preset equalization programs which can be edited and stored in 60 user RAM locations for instant recall.**
- **Full 20Hz – 20kHz frequency response from all EQ programs.**
- **MIDI program selection and bulk dump capability.**

## FEATURES

- A wide range of "graphic EQ" formats are available: 1-octave, 2/3-octave, 1/2-octave or 1/3 octave. All but the 1/3-octave type are full stereo configurations, and you have a choice of simultaneous or independent left and right channel programming. Independent L/R types with integral 3-band variable notch filter also provided.
- 4-band parametric equalizer programs with full center frequency, gain and Q (bandwidth) control on each band. Your choice of simultaneous or independent left and right channel programming. Independent L/R type with integral 3-band variable notch filter also provided.
- 6-band notch filter programs are provided with independent left and right channel programming.
- Tone control programs simulate tone controls on standard home audio equipment — independent channel programming and variable rolloff frequencies, however, make them more versatile than simple tone control.
- Versatile band pass and band rejection filters which combine variable high-pass and low-pass filters with programmable cut off frequency and slope.
- Dynamic PEQ and filter programs produce sweep-filter effects based on foot or MIDI control, input level or an internal LFO.
- Professional XLR-type balanced inputs and outputs with switchable – 20dB/ + 4dB input and output levels.
- Direct digital inputs and outputs for connection to Yamaha-format digital equipment such as the DMP7 Digital Mixing Processor.
- PROTECT function "locks" all panel controls to prevent accidental changing of critical EQ settings.

## GENERAL SPECIFICATIONS

## Electrical Characteristics

Total Harmonic Distortion	0.03% max. at 1kHz
Frequency Response	20Hz – 20kHz
Dynamic Range	86dB

## Input

Number of Channels	Balanced x2 (XLR type)
Nominal Level	+4dBm/ – 20dBm
Impedance	10kΩ
Level Control	Rotary, continuous
Level Monitor	8-segment LED

## Digital

Number of Channels	2
Sampling Frequency	44.1kHz
Quantization	16 bits
Digital I/O	Yamaha-format digital input x 1 Yamaha-format digital output x 1

## Output

Number of Channels	Balanced x2 (XLR type)
Nominal Level	+4dBm/ – 20dBm
Impedance	600Ω

## Memory

Presets (ROM)	1 – 30
User Memory (RAM)	31 – 90 (Battery Backup)

## MIDI Control

Memory selection (1 – 90) by MIDI Program change number.  
MIDI foot control message controls filter sweep in programs 27 and 30.  
Bulk dump & receive.

## Front Panel

**Keys:** PARAMETER, DELAY/LEVEL, DATA INCREMENT, STORE, RECALL, MEMORY INCREMENT, MEMORY DECREMENT, UTILITY, PROTECT ON/OFF, BYPASS  
**Jacks:** FOOT CONTROL, BYPASS  
**Display:** 16 char. x 2 line backlit LCD, 2-digit 7-segment LED

## Rear Panel

<b>INPUT/OUTPUT Jacks</b>	INPUT L, INPUT R, OUTPUT L, OUTPUT R, DIGITAL IN, DIGITAL OUT
<b>Level Selectors</b>	INPUT LEVEL (+4dB/ – 20dB) OUTPUT LEVEL (+4dB/ – 20dB)
<b>MIDI Terminals</b>	IN

## General

<b>Power Supply</b>	US & Canadian models: 120 VAC, 30W General model: 220 – 240 VAC, 30W
<b>Dimensions (W x H x D)</b>	480mm x 45.2mm x 285mm (18-7/8" x 1-3/4" x 11-1/4")
<b>Weight</b>	3.7kg (8.2 lbs.)

\*Security Cover is optionally available.



# R100

## REVERB PROCESSOR



R100

■ **60 professional-quality pre-programmed reverb and delay effects, that can be reprogrammed.**

■ **Completely digital operation for optimum sound quality and clarity in a compact package.**

### FEATURES

- 60 superb digital effects for a wide range of sound processing applications.
- Stereo outputs that deliver dramatic separation with the many stereo effects available.
- Programming capability with four adjustable parameters for custom shaping of the sound.
- A BALANCE parameter, included in all effects, permits setting of the ideal blend between the effect sound and the direct sound.
- MIDI program change capability allows selection of any of the R100's 60 effect programs from a connected synthesizer, or even automatically by sequencer control—ideal for instantly matching instrument sounds with the appropriate effects.
- 6 different groups of effects, each of which matches a specific recording application, such as the processing of instrument sounds, or vocal sounds, or adding an overall reverb in mixdown.

### GENERAL SPECIFICATIONS

<b>Analog Circuit</b>	
Frequency Response	20 Hz – 12 kHz
Dynamic Range	Delay: More than 80 dB Others: More than 74 dB
Total Harmonic Distortion	Less than 0.1% at DELAY, 1 kHz, max.
<b>Input</b>	
Number of Channels	Unbalanced x 1 (phone jack)
Nominal Level	-20 dBm
Impedance	More than 500kΩ
<b>Output</b>	
Number of Channels	Unbalanced x 2 (phone jack)
Nominal Level	-20 dBm
Impedance	1kΩ
<b>A/D and D/A Conversion</b>	
Number of Channels	1
Sampling Frequency	31.25 kHz
Quantization	16 bits

#### Front Panel

Input Level Monitor  
Keys  
Memory Number Display  
Memory  
LED Displays

CLIP and SIGNAL  
PARAM, (↑), (↓), MEMORY, RECALL, MIDI, BYPASS  
2-digit 7-segment LED  
1–60  
P1–P4, PGM, MEMORY, BYPASS

#### Rear Panel

Foot Switch  
Input Terminal  
Output Terminal  
MIDI IN Terminal  
DC12V IN

BYPASS  
Phone Jack  
Phone Jack (L, R)  
5-pin DIN  
DC Power Connector

#### General

Power Requirements  
(PA-1(B) AC Adaptor)  
Dimensions (W x H x D)  
Weight

U.S. & Canadian models: 120 V AC, 60 Hz  
General model: 220/240 V AC, 50/60 Hz  
220 x 150 x 44 mm (8-5/8" x 6" x 1-3/4")  
900 g (1.98 lbs)

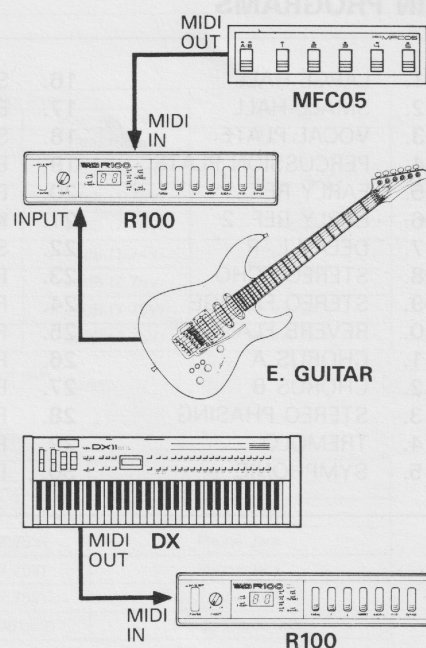
\*RK100 Rack-mount Kit is optionally available.

### MIDI PROGRAM CHANGE CAPABILITY

Any of the R100's 60 effect programs can be selected by using the front panel keys, or by MIDI program change messages. A Yamaha MFC05 MIDI Foot Controller, for example, can be used for direct footswitch selection of up to 10 of the R100's programs. Program change messages from a MIDI keyboard can be used to select effects directly from the keyboard controls. The R100 also permits MIDI program change numbers to be assigned to specific effect programs, so any effect can be selected by any program number. This means that the appropriate effect is automatically selected for any voice you choose on your keyboard or other MIDI instrument.

#### 60 PRESET EFFECTS PROGRAM

REVERB		EARLY REFLECTION		STEREO ECHO	
1	LARGE HALL	21	ATTACK DELAY 1	41	STANDING FILTER
2	MID-SIZE HALL	22	ATTACK DELAY 2	42	DOUBLER 1
3	SMALL HALL	23	SLAP ATTACK	43	DOUBLER 2
4	LARGE CHURCH	24	ECHO REFLECTIONS	44	DOUBLER 3
5	CATHEDRAL	25	SHORT GATE	45	RING DOUBLER
6	DEEP REVERB 1	26	SHORT GATE 2	46	ECHO RIGHT
7	DEEP REVERB 2	27	LONG GATE	47	ECHO LEFT
8	SOLO REVERB	28	ECHO GATE	48	MULTI-ECHO
9	LARGE CLUB	29	SLOW GATE 1	49	ECHO 1
10	SMALL CLUB	30	SLOW GATE 2	50	ECHO 2
DELAY & REVERB		EARLY REFLECTION with Feedback		DELAY L/R	
11	LIVE ROOM 1	31	HARD ROOM 1	51	STANDING CHORUS
12	LIVE ROOM 2	32	HARD ROOM 2	52	DELAY R to L
13	TUNNEL REVERB	33	HARD ROOM GATE 1	53	DELAY L to R
14	RESONANT SPACE	34	HARD ROOM GATE 2	54	INFINITY ECHO
15	SLAP REVERB 1	35	PLATE ECHO	55	PING-PONG GATE
16	SLAP REVERB 2	36	SCRATCH PLATE	56	PING-PONG DELAY
17	SLAP REVERB 3	37	REVERSE ECHO	57	MULTI PONG 1
18	DELAYED REVERB 1	38	TIGHT GATE	58	MULTI PONG 2
19	DELAYED REVERB 2	39	E/R FILTER	59	DELAY LEFT CHAIN
20	DELAYED REVERB 3	40	SOFT REFLECTIONS	60	DELAY RIGHT CHAIN



## REV5

## DIGITAL REVERBERATOR

INTEGRATED MIXERS



REV5

- **A professional-quality digital stereo reverberator/effects unit.**
- **Increased sampling frequency, delay time.**
- **Extensive preset program selection; and expanded control over effect parameters.**

## FEATURES

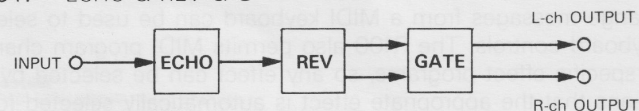
- Improved sound quality with a 20 Hz to 20 kHz frequency response.
- Comprehensive, programmable digital 3-band parametric EQ system in addition to a master 3-band parametric EQ section.
- Studio-quality modulation effects, such as stereo flange, stereo phasing, and tremolo.
- Independent control of delay, reverb, and diffusion parameters in reverb programs.
- Separate 1st reflection right-, left-, and center-delay/level parameters.
- Secondary reverb time, delay, and level controls enable production of a second layer of reverberation to augment the primary reverberation.
- Space modulation parameter creates periodic variation in reverberation program to recreate actual interference between reflections in a live acoustic environment.
- Custom reverberation programs designed by professional sound engineers to enhance the sounds of specific sources.
- Reverb and Gate programs, a pan program, and several pitch change programs (with MIDI control) for harmony and chorus effects.
- 30 main effect programs, and 60 user-programmable memory locations.
- 9 unique combination programs, such as chorus/reverb/gate, for professional multi-effect processing.

## MAIN PROGRAMS

- |                      |                     |
|----------------------|---------------------|
| 01. LARGE HALL       | 16. SPRING          |
| 02. SMALL HALL       | 17. ECHO ROOM       |
| 03. VOCAL PLATE      | 18. STRINGS         |
| 04. PERCUSSION PLATE | 19. ELECTRIC BASS A |
| 05. EARLY REF. 1     | 20. ELECTRIC BASS B |
| 06. EARLY REF. 2     | 21. KICK            |
| 07. DELAY L, R       | 22. SNARE           |
| 08. STEREO ECHO      | 23. REVERB & GATE   |
| 09. STEREO FLANGE    | 24. REVERSE GATE    |
| 10. REVERB FLANGE    | 25. REHEARSAL ROOM  |
| 11. CHORUS A         | 26. PITCH CHANGE A  |
| 12. CHORUS B         | 27. PITCH CHANGE B  |
| 13. STEREO PHASING   | 28. PITCH CHANGE C  |
| 14. TREMOLO          | 29. PAN             |
| 15. SYMPHONIC        | 30. LIVE REFERENCE  |

## COMBINED PROGRAMS

## 91. ECHO &amp; REV &amp; G



## 92. CHORUS &amp; REV &amp; G

## 93. SYMPHONIC &amp; REV &amp; G

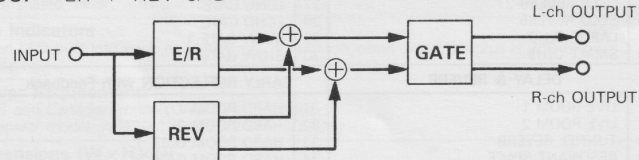
## 94. PC &amp; REV &amp; G

## 95. REV &amp; SYMPHONIC &amp; G

## 96. REV &amp; PAN &amp; G

## 97. REV &amp; PC &amp; G

## 98. ER + REV &amp; G



## 99. PLATE + HALL &amp; G



## GENERAL SPECIFICATIONS

<b>Electrical Characteristics</b>	
Effect Freq. Response	20Hz ~ 20kHz
Dynamic Range	Reverb: > 78dB Delay: > 84dB
THD	< 0.03% at 1kHz, max. level
Analog Equalizer	LOW: $\pm 15$ dB, 50Hz ~ 700Hz MID: $\pm 15$ dB, 350Hz ~ 5kHz HI: $\pm 15$ dB, 2kHz ~ 20kHz
<b>Input</b>	
Number of Channels	Elec. balanced x 2 (XLR type) Elec. balanced x 2 (TRS phone)
Nominal Level	-20/+4dBm, switchable
Level Control	Rotary, continuous
Level Monitor	8-segment LED
<b>A/D Conversion</b>	
Number of Channels	1
Sampling Frequency	44.1kHz
Quantization	16 bits
<b>D/A Conversion</b>	
Number of Channels	2
Sampling Frequency	44.1kHz
Quantization	16 bits
<b>Output</b>	
Number of Channels	Elec. balanced x 2 (XLR type) Elec. balanced x 2 (TRS phone)
Nominal Level	-20/+4dBm, switchable
Impedance	600 $\Omega$

<b>Memory</b>	
Presets (ROM)	1 - 30, 91 - 99
User Memory (RAM)	31 - 90 (Battery backup)

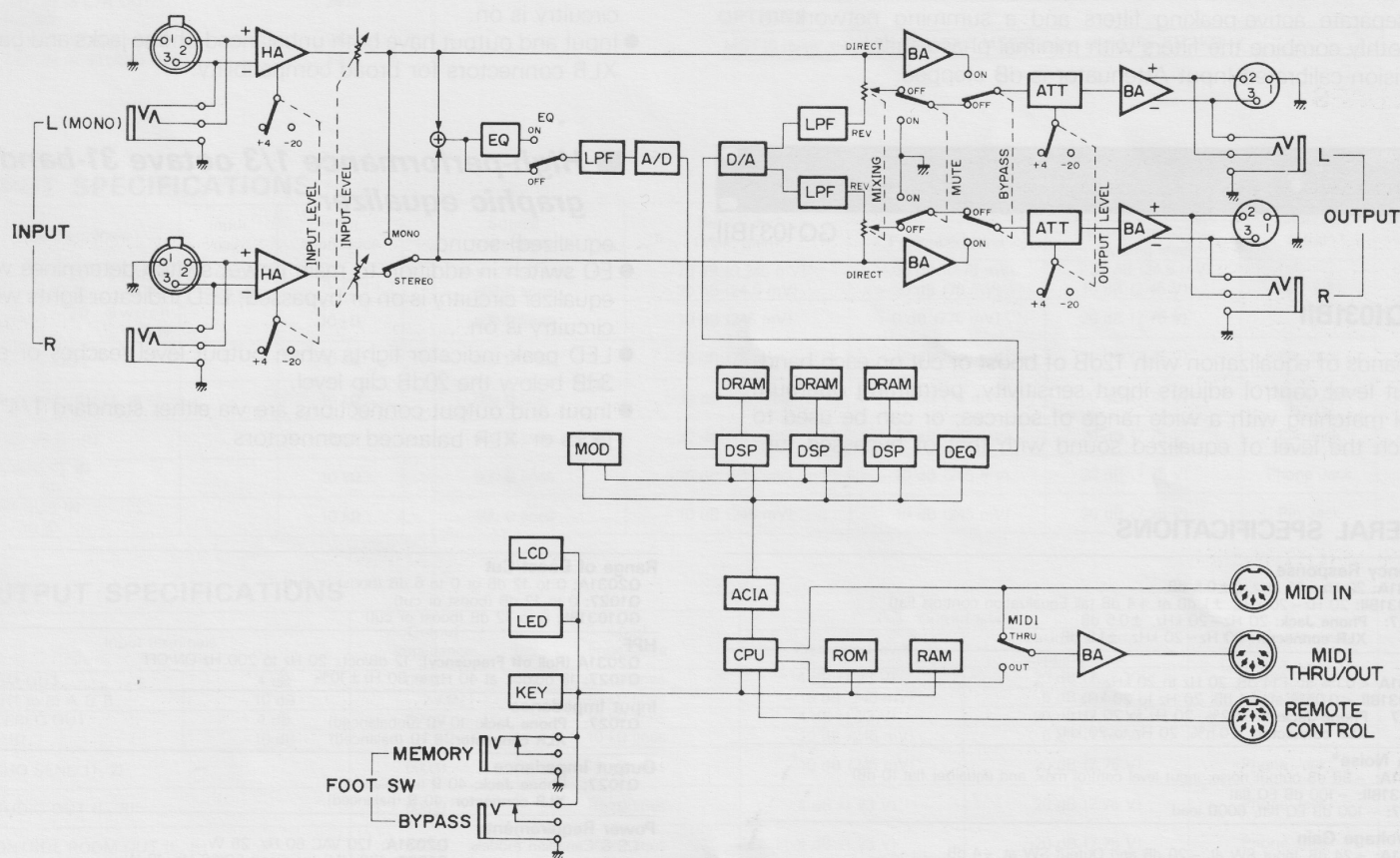
**MIDI Control**  
Program selection by MIDI program change number.  
MIDI base key selection for pitch change programs.  
Bulk dump & load.

**Front Panel**  
**Controls:** INPUT LEVEL, EQ (LO FREQ & LEVEL, MID FREQ & LEVEL, HI FREQ & LEVEL), MIXING, EQ ON/OFF, MONO/STEREO  
**KEYS:** Direct recall (REV1/-31-, REV2/-32-, REV3/-33-, REV4/-34-, ER1/-35-, ER2/-36-, OTHERS/-37-), USER MEMORY, PARAMETER, LEVEL, INITIAL DELAY, 1ST REF, EQ, EQ ON,  $\uparrow$ ,  $\downarrow$ , 10-key numeric pad, CLEAR, MEMORY, STORE, RECALL/ENTER, -, MUTE, INT PARAM, UTILITY, BYPASS  
**Display:** 16 char. x 2 line LCD, 2-digit 7-segment LED

<b>General Power Supply</b>	
US & Canada:	110 - 120 VAC, 30W
General model:	220 - 240 VAC, 30W
<b>Dimensions (W x H x D)</b>	
480mm x 90mm x 343mm	
(18-7/8" x 3-1/2" x 13-1/2")	
<b>Weight</b>	
5.5kg (12.13 lbs.)	

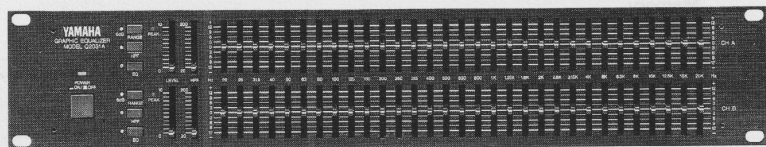
<b>Accessories</b>	Remote control unit RC5
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## BLOCK DIAGRAM



# Q2031A/1027/GQ1031BII

## GRAPHIC EQUALIZERS



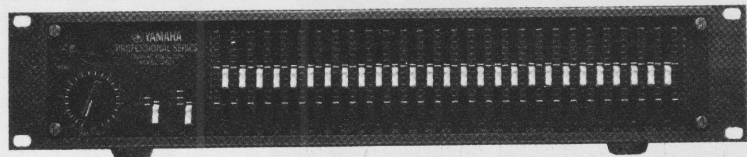
Q2031A

### FEATURES

#### ■ Q2031A

- 6 or 12dB of boost or cut at any point, with points centered at ISO 1/3 octave frequencies from 20Hz to 20kHz.
- Range switches on each channel reduce boost or cut from normal  $\pm 12$ dB to  $\pm 6$ dB for ultra-fine tuning.

\*SC2031 Security Cover is optionally available.



Q1027

#### ■ Q1027

- Points are centered at ISO 1/3 octave frequencies from 40Hz to 16kHz.
- 27 separate active-peaking filters and a summing network to smoothly combine the filters with minimal phase shift.
- Precision-calibrated Input Attenuator is dB stepped.



GQ1031BII

#### ■ GQ1031BII

- 31 bands of equalization with 12dB of boost or cut on each band.
- Input level control adjusts input sensitivity, permitting optimum level matching with a wide range of sources, or can be used to match the level of equalized sound with that of bypassed (un-

### ■ Highly sophisticated stereo 31-band graphic equalizer.

- High-pass filters on both channels provide 12dB per octave of roll-off below the desired frequency, variable 20-200 Hz.
- Peak indicating LED's on both channels light 3dB below clipping.
- Automatic muting circuit mutes output for 3 to 5 seconds after power is switched on to prevent transients from damaging amplifiers or speaker systems.
- Both balanced XLR connectors and standard unbalanced phone jacks on all inputs and outputs.

### ■ 27-band professional graphic equalizer with 12dB of boost or cut at all points.

- High pass filter switch gives 18dB per octave roll-off below 40Hz or 80Hz.
- Peak indicating LED lights 3dB below clipping.
- EQ switch in addition to main power switch determines whether equalizer circuitry is on or bypassed, LED indicator lights when EQ circuitry is on.
- Input and output have both unbalanced phone jacks and balanced XLR connectors for broad compatibility.

### ■ High-performance 1/3 octave 31-band graphic equalizer.

equalized) sound.

- EQ switch in addition to main power switch determines whether equalizer circuitry is on or bypassed; LED indicator lights when EQ circuitry is on.
- LED peak indicator lights when output level reaches or exceeds 3dB below the 20dB clip level.
- Input and output connections are via either standard 1/4" phone jacks or XLR balanced connectors.

## GENERAL SPECIFICATIONS

### Frequency Response

Q2031A: 20 Hz–20 kHz,  $0 \pm 0.5$  dB  
 GQ1031BII: 20 Hz–20 kHz,  $\pm 1$  dB at +4 dB (all Equalization controls flat)  
 Q1027: Phone Jack: 20 Hz–20 kHz,  $\pm 0.5$  dB  
 XLR connector: 20 Hz–20 kHz,  $\pm 1.5$  dB

### THD

Q2031A:  $<0.1\%$  at +14 dB, 20 Hz to 20 kHz  
 GQ1031BII:  $<0.05\%$  at +4 dB, 20 Hz to 20 kHz  
 Q1027: Phone Jack:  $<0.02\%$ , 20 Hz to 20 kHz  
 XLR connector:  $<0.5\%$ , 20 Hz to 20 kHz

### Hum & Noise\*

Q2031A: -96 dB output noise; input level control max. and equalizer flat (0 dB)  
 GQ1031BII: -100 dB EQ flat  
 Q1027: -100 dB EQ flat, 600 $\Omega$  load

### Max. Voltage Gain

Q2031A: +24 dB, Input SW at -20 dB and Output SW at +4 dB  
 GQ1031BII: +24 dB, input level at -20 dB and Output level at +4 dB  
 Q1027: 0 dB (unity), EQ bypassed

### Indicators

Power ON: Red, GEQ ON: Green, HPF ON: Green,  
 GEQ range "+6 dB": Red, Peak indicator: Red  
 Turns on when the instantaneous level is 3 dB below clipping (+17 dB)

### Controls

Q2031A: GEQ: 31 band (1/3 oct.)  
 20/25/31.5/40/50/63/80/100/125/160/200/250/315/400/500/630/800/1k/  
 1.25k/1.6k/2k/2.5k/3.15k/4k/5k/6.3k/8k/10k/12.5k/16k/20kHz  
 Range SW  $\pm 6/12$  dB ON/OFF SW

Input Level Control  
 Input Level SW: -20/+4 dB Output Level SW: -20/+4 dB

### Center Frequencies

Q1027: 40/50/63/80/125/160/250/315/400/500/630/800/1k/1.25k/1.6k/2k/2.5k/3.15k/4k/5k/  
 6.3k/8k/10k/12.5k/16kHz  $\pm 5\%$

GQ1031BII: 31 band (1/3 oct.)  
 20/25/31.5/40/50/63/80/100/125/160/200/250/315/400/500/630/800/1k/1.25k/  
 1.6k/2k/2.5k/3.15k/4k/5k/6.3k/8k/10k/12.5k/16k/20kHz

### Range of Boost/Cut

Q2031A: 0 to 12 dB or 0 to 6 dB (boost or cut)  
 Q1027: 0 to 12 dB (boost or cut)  
 GQ1031BII: 0 to 12 dB (boost or cut)

### HPF

Q2031A (Roll off Frequency): 12 dB/oct., 20 Hz to 200 Hz ON/OFF  
 Q1027: 18 dB/oct. at 40 Hz or 80 Hz  $\pm 10\%$

### Input Impedance

Q1027: Phone Jack: 10 k $\Omega$  (unbalanced)  
 XLR connector: 8 k $\Omega$  (balanced)

### Output Impedance

Q1027: Phone Jack: 40  $\Omega$  (unbalanced)  
 XLR connector: 40  $\Omega$  (balanced)

### Power Requirements

US & Canadian models: Q2031A: 120 VAC 60 Hz, 25 W  
 Q1027: 120 VAC (nominal) 50/60 Hz, 18 W  
 GQ1031BII: 120 VAC 60 Hz, 10 W  
 General model: Q2031A: 110–130/220–240 VAC 50/60 Hz, 25 W  
 Q1027: 110–130/220–240 VAC 50/60 Hz, 20 W  
 GQ1031BII: 110–120/220–240 VAC 50/60 Hz, 11 W

### Dimensions (W×H×D)

Q2031A: 480×88×298 mm (18-7/8"×3-1/2"×11-3/4")  
 Q1027: 480×95.4×305 mm (18-7/8"×3-2/3"×12") (Add 1/2" to depth for security cover.)  
 GQ1031BII: 480×44×222 mm (18-7/8"×1-3/4"×8-3/4")

### Weight

Q2031A: 5.1 kg (11.2 lbs) Q1027: 8 kg (17.6 lbs) GQ1031BII: 2.9 kg (6.4 lbs)

\* Compensated with -6 dB/oct. filter at 12.47 kHz.

\*\* 0 dB=0.775V RMS.



## GC2020BII

2-CHANNEL  
COMPRESSOR/LIMITER

GC2020BII

- **Ultra-high performance 2-channel compressor/limiter with all the features necessary for accurate tailoring of compression and limiting parameters.**

## FEATURES

- A full 20Hz-to-20kHz frequency response with no more than 0.03% THD at maximum output.
- Switch selectable dual-mono and stereo modes.
- Comp In/Out switches on both channels activates or bypasses compression/limiter circuitry; LED indicates status.

## CARACTERISTIQUES GENERALES

Channel 2-channel	
Mode STEREO Mode, Dual mono Mode	
Frequency Response +1 dB -3 dB 20 Hz to 20 kHz at +4 dB	
THD <0.05% at +4 dB 20 Hz to 20 kHz	
Noise Level <-87 dB (IHF-A)	
Input XLR balanced connectors	1/4" TRS phone jack
Input Impedance: 15 kΩ	
Nominal Input Level: +4 dB, -20 dB	Max. Input Level: +20 dB, -4 dB
Output XLR balanced connectors	1/4" mono phone jack
Input Impedance: 600 Ω	
Nominal Output Level: +4 dB, -20 dB	Max. Output Level: +20 dB, -4 dB (XLR connector)
Detector Input Unbalanced RCA pin jack	
Input Impedance: 27 kΩ	Max. Input Level: +20 dB
Detector Output Unbalanced RCA pin jack	
Output Impedance: 600 Ω	Max. Output Level: +20 dB
Ratio Control 1:1 to ∞:1	
Max. Limiting 32 dB	
Gain Reduction Indicator 5-segment LED	

- Expander Gate with a variable threshold level on each channel eliminates background hiss and noise during no-signal portions of a program.
- A 5-segment LED meter on each channel indicates how much compression or limiting is being applied.
- Separate adjustments on each channel provide precise threshold control.
- Variable compression controls on each channel provide precise tailoring of compression ratio.
- Variable attack and release-time adjustments on each channel provide natural sound with a wide variety of signals.
- Input and Output level controls on each channel give broad compatibility with professional equipment.
- Input and Output connections utilize both standard 1/4" phone jacks and XLR balanced connectors.

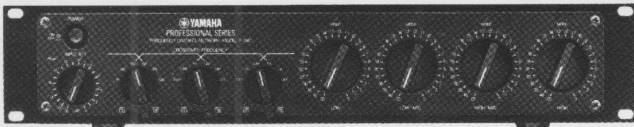
Compressor/Limiter Threshold Level Control (Input level switch at +4 dB)	
Input Control at 0 position:	+20 dB to +5 dB
Input Control at Center position:	+20 dB to -20 dB
Input Control at 10 position:	+5 dB to -35 dB
Expand Noise Gate Threshold Level Control (Input level switch at +4 dB)	
Input Control at 0 position:	0 dB to -40 dB
Input Control at Center position:	-25 dB to -65 dB
Input Control at 10 position:	-40 dB to -80 dB
Attack Time Control 0.2 ms to 20 ms	
Release Time Control 50 ms to 2 s	
Power Requirements	
US & Canadian models: 120 V, 60 Hz	
General model: 110-120/220-240 V, 50/60 Hz	
Power Consumption	
US & Canadian models: 23 W	
General model: 19 W	
Dimensions (W×H×D) 480×44×235 mm (18-7/8"×1-3/4"×9-1/4")	
Weight 3 kg (6.6 lbs)	
0 dB = 0.775V RMS	
Specifications subject to change without notice.	

## F1030/1040

## FREQUENCY DIVIDING NETWORKS



F1030



F1040

- **Professional 3- or 4-way frequency-dividing networks with independent control bands.**

## FEATURES

- A full +24dB output into 600 ohm load and input capabilities of +30dB assure complete professional compatibility.
- Rear panel Mode switch configures the units as 2-way, 3-way, or 4-way (F1040) networks.

## CARACTERISTIQUES GENERALES

Frequency Response	
Low Output ±0.5 dB (20 Hz)	
High Output +0.5 dB -1 dB (20 kHz)	
THD	
F1030: 0.01% (+14 dB, 20 Hz to 20 kHz)	
F1040: XLR: <0.2% (+14 dB, 20 Hz to 20 kHz)	
Phone Jack: <0.01% (+14 dB, 20 Hz to 20 kHz)	
Hum & Noise	
F1030: <-76 dB	
F1040: <-100 dB	
Max. Voltage Gain	
F1030: +6 dB	
F1040: 0 dB (unity)	
HPF 40 Hz 12 dB/oct. Switchable bypass	
Output Phase Switches Low, Low-Mid, High-Mid, High: Normal/Reverse polarity	
Pin 1 Ground Switches Input, Low, Low-Mid, High-Mid, High (F1040)	

- Front panel Mode switch configures the units as 2-way or 3-way (F1030).
- Filter slope is switch selectable at either 12dB/octave or 18dB/octave.
- Switchable 40Hz high pass filter (12dB/octave) eliminates sub-sonic rumble and dangerous transient highs.
- Detented and dB-calibrated Input and Output level controls.
- Exceptional control convenience permits real time audition, selection of crossover points, and balance of relative output levels.
- Peak LED's above front panel output controls light when output reaches +14dB.
- Inputs have both male and female transformer-coupled XLR's for use with balanced or floating lines, and standard phone jacks for use with unbalanced equipment.
- Outputs are both balanced XLR connectors and standard phone jacks for use with unbalanced equipment; phase switches are provided on all output connections.

Indicators	
Peak Indicator: LED turns on at 3 dB below clipping.	
Mode Indicator: 2 color LEDs (green/red) Signal active outputs	
Power Requirements	
US & Canadian models: 120 VAC, 60 Hz	
General model: 110/120/220/240 VAC, 50/60 Hz	
Dimensions (W×H×D)	
F1030: 480×95.5×238.7 mm (18-7/8"×3-3/4"×9-3/8")	
F1040: 480×95.5×304.7 mm (18-7/8"×3-3/4"×12")	
(When security cover mounted, add 1/2" to depth)	
Weight	
F1030: 7.5 kg (16.5 lbs)	
F1040: 8 kg (17.6 lbs)	
0 dB = 0.775V RMS	
**Nominal source level required for an output of +4 dB.	
Specifications subject to change without notice.	

# SPX1000

## PROFESSIONAL MULTI-EFFECT PROCESSOR

**New Product**

SPX1000

- **A wide selection of professional-quality digital effects using Yamaha's new DSP11 processing I.C.**
- **40 preset effects in ROM, 59 user-stored RAM locations for custom-edited programs.**
- **Comprehensive MIDI functions.**

### FEATURES

- Sophisticated digital reverberation and effects system, providing 40 preset effect programs including:
  - Accurate simulations of natural reverberation and early-reflections;
  - Delay and echo;
  - Gated reverb;
  - Modulation;
  - Compression;
  - Low-level expander;
  - Harmonic exciter;
  - Freeze (sampling); and others.
- Multiple effects provide professional multi-effect processing.
- Independent 2-channel effects for maximum sound processing flexibility.
- Preset effect programs can be edited, retitled and stored in any of 59 RAM user, memory locations.
- Sampling frequency of 44.1 kHz and full frequency response from 20 Hz to 20 kHz for exceptionally clean, transparent effect sound.
- Digital inputs and outputs make possible direct digital interfacing with other digital equipment, such as the DMP series of digital mixing processors, and DEQ7 Digital Equalizer.
- Individual two-band parametric EQ and dynamic filter parameters on each effect program for precise tonal control.
- A list of "internal parameters," provided in addition to the basic effect and EQ parameters, offer even further control over the effect sound.
- Full MIDI compatibility with a MIDI IN terminal for MIDI selection of internal programs. Switchable MIDI THRU/OUT terminal.
- Two parameters per program may be selected for external control via MIDI or other controller.

### GENERAL SPECIFICATIONS

<b>Electrical Characteristics</b>	
Frequency Response	20 Hz ~ 20 kHz
Dynamic Range	90 dB (Delay Mode)
Total Harmonic Distortion	Less than 0.03% at 1 kHz
<b>Analog Input</b>	
Number of Channels	Unbalanced x 2 (Phone Jack)
Nominal Level	+4/-20 dB Switchable
Impedance	50 k $\Omega$ (STEREO IN), 25k $\Omega$ (MONO)
<b>A/D &amp; D/A Conversion</b>	
Number of Channels	2
Sampling Frequency	44.1 kHz
Quantization	16 bits
<b>Analog Output</b>	
Number of Channels	Unbalanced x 2 (Phone Jack)
Nominal Level	+4/-20 dB Switchable
Output Impedance	220 $\Omega$
<b>Digital Input/Output</b>	
Format	Yamaha Format (16 bits, 2 channels)
Connector	8-pin DIN
<b>Memory</b>	
Preset (ROM)	1 - 40
User Memory (RAM)	41 - 99

#### MIDI Control

Program Change (Memory selection), Note ON (Pitch selection), Control Change (Parameter control), Bulk Dump & Load (Memory parameters, program change table, user ER data, system setup data)

#### Front Panel

##### Control Keys

INPUT LEVEL, PARAMETER UP/DOWN, SCROLL BACK, PARAM, EQ, INT. PARAM, LEVEL, EXT CTRL ASSIGN, STORE, MEMORY UP/DOWN, RECALL, UTILITY, TRIGGER, BYPASS

##### Displays

16-character x 2-line LCD, 7-segment x 2-digit LED, 8-element 2-channel LED Level Meter, 4 Input Mode Indicator LEDs, 3 Digital I/O Mode Indicator LEDs, Foot Controller Jacks x 2

#### Rear Panel

##### Connectors

INPUT L/R (Phone Jacks x 2), OUTPUT L/R (Phone Jacks x 2), MIDI IN, THRU/OUT (5-pin DIN x 2), DIGITAL I/O (8-pin DIN x 2), TRIGGER 2 ANALOG (Phone Jack), TRIGGER 1 SW (Phone Jack), MEMORY INC/DEC (Phone Jack), BYPASS (Phone Jack)

##### Switches

Input Level Switch, Output Level Switch, MIDI THRU/OUT Switch, TRIGGER 2 ANALOG Level Switch

#### Dimensions (W x H x D)

480 x 45.2 x 315 mm

#### Weight

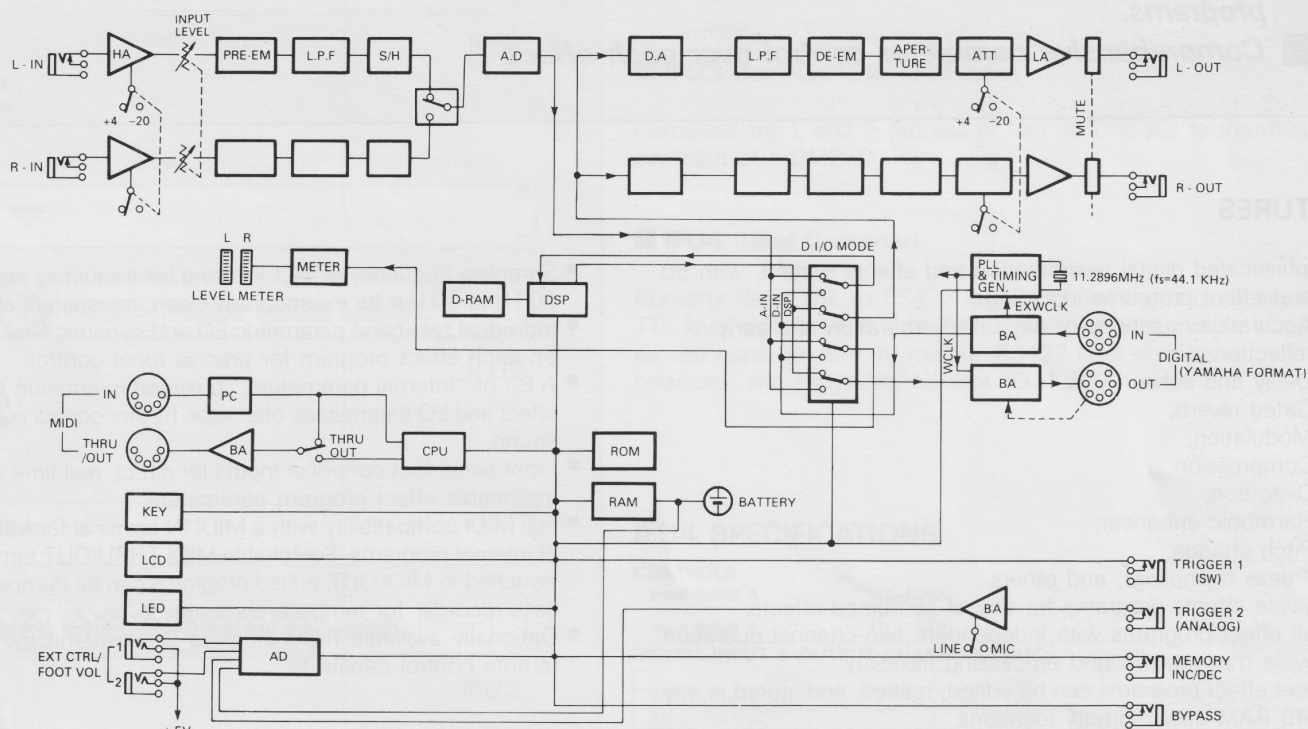
3.7 kg



## SPX1000 Preset Effect Programs

- |                    |                     |                       |                      |
|--------------------|---------------------|-----------------------|----------------------|
| 1. REV 1 HALL      | 11. DELAY L, C, R   | 21. PITCH CHANGE 2    | 31. PLATE+HALL       |
| 2. REV 2 ROOM      | 12. STEREO ECHO     | 22. PITCH CHANGE 3    | 32. ER+REV           |
| 3. REV 3 VOCAL     | 13. STEREO FLANGE A | 23. FREEZE 1          | 33. ECHO+REV         |
| 4. REV 4 PLATE     | 14. STEREO FLANGE B | 24. FREEZE 2          | 34. CHORUS+REV       |
| 5. REV 5 ECHO ROOM | 15. CHORUS          | 25. PAN               | 35. PAN+PAN          |
| 6. EARLY REF. 1    | 16. STEREO PHASING  | 26. TRIGGERED PAN     | 36. COMPRESSOR       |
| 7. EARLY REF. 2    | 17. TREMOLO         | 27. DISTORTION        | 37. LOW LVL EXPANDER |
| 8. EARLY REF. 3    | 18. SYMPHONIC       | 28. MULTI (CHO & REV) | 38. EXCITER          |
| 9. GATE REVERB     | 19. ADR-NOISE GATE  | 29. MULTI (SYM+REV)   | 39. STEREO PITCH     |
| 10. REVERSE GATE   | 20. PITCH CHANGE 1  | 30. MULTI (EXC & REV) | 40. STEREO FREEZE    |

## BLOCK DIAGRAM



Digital Audio Cables **YDC803** (3 m), **YDC805** (5 m), **YDC815** (15 m) are optionally available.

# SPX900

## PROFESSIONAL MULTI-EFFECT PROCESSOR

New Product



SPX900  
RCX1 (Optional)



- **A wide selection of professional-quality digital effects in a single, compact, rack-mount unit.**
- **50 preset effect programs in ROM, 49 user-stored RAM locations for custom-edited programs.**
- **Comprehensive parameter control over each effect.**

### FEATURES

- Sophisticated digital reverberation and effects system, with 50 preset effect programs including:
  - Accurate simulations of natural reverberation and early reflections;
  - Delay and echo;
  - Gated reverb;
  - Modulation;
  - Compression;
  - Distortion;
  - Harmonic enhancer;
  - Pitch change;
  - Freeze (sampling); and others.
- Multiple effects programs for use of combined effects.
- Dual effect programs with independent two-channel operation provide maximum sound processing flexibility.
- Preset effect programs can be edited, retitled, and stored in any of 49 RAM user memory locations.
- Sampling frequency of 44.1 kHz and full frequency response from 20 Hz to 20 kHz for exceptionally clean, transparent effect sound.
- Individual two-band parametric EQ and dynamic filter parameters on each effect program for precise tonal control.
- A list of "internal parameters," provided in addition to the basic effect and EQ parameters, offer even further control over the effect sound.
- Front panel foot controller inputs for direct, real time control over assignable effect program parameters.
- Full MIDI compatibility with a MIDI IN terminal for MIDI selection of internal programs. Switchable MIDI THRU/OUT terminal; when switched to MIDI OUT, edited programs can be dumped to a MIDI data recorder for temporary storage.
- Optionally available RCX1 Remote Control Unit for convenient remote control capability.

### GENERAL SPECIFICATIONS

#### Electrical Characteristics

Frequency Response	20 Hz ~ 20 kHz
Dynamic Range	90 dB (delay mode, typical)
Distortion	0.03% at 1 kHz

#### Input

Number of Channels	1
Input Level	+4/-20 dB, switchable
Input Impedance	50 kΩ

#### A/D, D/A Conversion

Number of Channels	A/D x 1, D/A x 2
Sampling Frequency	44.1 kHz
Quantization	16 bits (50μs/15μs emphasis)

#### Output

Number of Channels	2
Output Level	+4/-20 dB, switchable
Output Impedance	220Ω

#### Memory

Preset Programs (ROM):	1-50: 1. Rev 1 Hall/2. Rev 2 Hall & Gate/3. Rev 3 Room 1/4. Rev 4 Room 2/5. Rev 5 Room 3/6. Rev 6 White Room/7. Rev 7 Vocal 1/8. Rev 8 Vocal 2/9. Rev 9 Plate/10. Rev 10 Plate & Gate/11. Rev 11 Tunnel/12. Rev 12 Canyon/13. Rev 13 Basement/14. Percussion ER/15. Gate Reverb/16. Reverse Gate/17. Programmable ER/18. Delay L, R/19. Delay L, C, R/20. Stereo Echo/21. Stereo Flange/22. Chorus 1/23. Chorus 2/24. Stereo Phasing/25. Tremolo/26. Symphonic/27. ADR-Noise Gate/28. Pitch Change 1/29. Pitch Change 2/30. Pitch Change 3/31. Mono Pitch/32. Freeze/33. Pan/34. Triggered Pan/35. Compressor/36. Distortion/37. Exciter/38. Multi (Ech & Rev) 1/39. Multi (Ech & Rev) 2/40. Multi (Cho & Rev) 1/41. Multi (Cho & Rev) 2/42. Multi (Cho & Rev) 3/43. Multi (Sym+Rev) 1/44. Multi (Sym+Rev) 2/45. Multi (Sym+Rev) 3/46. Multi (Exc & Rev) 1/47. Multi (Exc & Rev) 2/48. Plate+Hall/49. ER+Rev/50. Echo+Rev
User Memory (RAM):	51-99

#### MIDI Control

Program Change	Memory Selection
Note On	Pitch Selection
Control Change	Parameter Control
Bulk Dump (send/receive)	Program Parameters, Program Change Assignment Table, Control Assignment Table, User ER Patterns, System Setup Data

#### Front Panel

Control Keys	Input Level Parameter ▲ and ▼, SCROLL BACK, PARAM, EQ, INT PARAM, LEVEL, EXT CTRL ASSIGN, Memory ▲ and ▼, RECALL, STORE, UTILITY, TRIGGER, BYPASS
Displays	16-character x 2-line backlit LCD, 2-digit 7-segment LED memory number display, 7-segment LED level meter
Connectors	External controller jacks x 2

#### Rear Panel

Connectors	INPUT (phone jack), OUTPUT L and R (phone jacks x 2), MIDI IN (5-pin DIN), MIDI THRU/OUT (5-pin DIN x 2), TRIGGER (phone jack), MEMORY INC/DEC (phone jack), BYPASS (phone jack), REMOTE (6-pin DIN)
Switches	Input Level, Output Level, MIDI THRU/OUT

#### Power Requirements

U.S. & Canadian models:	AC 120 V, 20 W
General model:	AC 220-240 V, 20 W

#### Dimensions (W x H x D)

480 x 45.2 x 319 mm

#### Weight

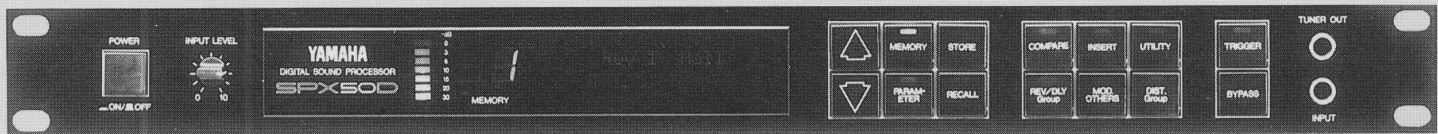
4.4 kg

RCX1 Remote Control Unit is optionally available.



# SPX50D

## DIGITAL SOUND PROCESSOR



SPX50D

- **High-quality digital effects designed especially for guitarists and keyboard players.**
- **50 preset effects in ROM, 50 user-stored RAM locations for custom-edited programs.**
- **Extensive MIDI control.**

### FEATURES

- High-quality digital effects include: spacious reverberation in a variety of environments, sophisticated delay and echo, rich modulation effects such as flanging and chorus, compression, parametric equalization, and a range of distortion programs that combine overdrive with other effects.
- Easy editing of effect parameters.
- Special direct recall keys for quick, convenient selection of three effect groups: REVERB/DELAY, MODULATION, DISTORTION, and OTHERS.
- Footswitch control of effect bypass, effect preset selection, and effect trigger.
- Front panel TUNER OUT jack connects directly to a guitar tuner, eliminating the need for unplugging and re-plugging of instrument.
- An external effect insert loop for connecting other effects in series with the SPX50D can be activated either by a front panel switch or automatically as part of a memorized preset.
- Extensive MIDI control allows remote selection of effect programs as well as MIDI-triggered gate, pitch change, and pan effects.
- True stereo output on many programs for wide, spacious stereo sound.
- Additional front panel input jack for convenient access.

### GENERAL SPECIFICATIONS

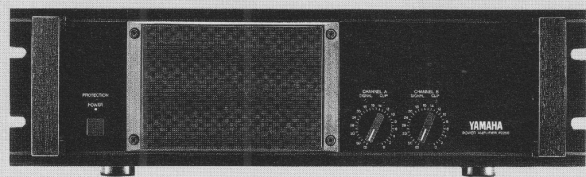
<b>Electrical Characteristics</b>	
Frequency Response	20 Hz ~ 12 kHz
Dynamic Range	Delay: More than 80 dB Others: More than 74 dB
Total Harmonic Distortion	Less than 0.1% at DELAY, 1 kHz, max.
<b>Input</b>	
Number of Channels	Unbalanced x 1 (phone jack)
Nominal Level	-20 dBm
Impedance	More than 500kΩ
<b>A/D, D/A Conversion</b>	
Number of Channels	1
Sampling Frequency	31.25 kHz
Quantization	16 bits
<b>Output</b>	
Number of Channels	Unbalanced x 2 (phone jack)
Nominal Level	-20 dBm
Impedance	1kΩ
<b>Memory</b>	
Presets (ROM)	1-50: 1. Rev 1 Hall / 2. Rev 2 Hall / 3. Rev 3 Hall / 4. Rev 4 Room / 5. Rev 5 Room / 6. Rev 6 Vocal / 7. Rev 7 Vocal / 8. Rev 8 Vocal / 9. Rev 9 Plate / 10. Rev 10 Plate / 11. Early Ref. / 12. Early Ref. / 13. Percussion E / R / 14. Gate Reverb / 15. Reverse Gate / 16. Delay L / R / 17. Delay Short / 18. Delay Long / 19. Echo Short / 20. Echo Long / 21. Stereo Flange / 22. Chorus A / 23. Chorus B / 24. Chorus C / 25. Stereo Phasing / 26. Tremolo / 27. Symphonic / 28. ADR-Noise Gate / 29. Compressor / 30. Reverb & Gate / 31. Pitch A / 32. Pitch B / 33. Pitch C / 34. Triggered Pan / 35. Parametric EQ / 36. Mid-Band Drive / 37. Heavy Metal / 38. Light Dist. / 39. Chunky Rhythm / 40. Smooth Drive / 41. Overdrive Hall / 42. Distortion Room / 43. E / R Distortion / 44. Slide Gate / 45. Delay Dist. / 46. Dist. Filter / 47. Flange Dist. / 48. Chorus Dist. / 49. Phase Dist. / 50. Symphonic Dist.
User Memory (RAM)	51-100

<b>MIDI Control</b>	Program Number Note ON/OFF
<b>Front Panel Keys</b>	(*), (.), MEMORY, PARAMETER, STORE, RECALL, COMPARE, INSERT, UTILITY, REV/DLY Group, MOD. OTHERS, DIST Group, TRIGGER, BYPASS
<b>Power ON/OFF</b>	16 char. x 2 lines, LCD/2-digit 7-segment LED
<b>Display</b>	7-segment LED
<b>Input Level Monitor</b>	Input Level Volume
<b>Knob</b>	TUNER OUT, INPUT
<b>Jack</b>	
<b>Rear Panel Jack (Mono)</b>	INPUT, INSERT IN/OUT, OUTPUT L/R, FOOT SW (MEMORY/TRIGGER, BYPASS)
<b>MIDI Terminals</b>	IN, THRU
<b>Power Requirements</b>	
U.S. & Canadian models:	120 V AC, 60 Hz
General model:	220-240 V AC, 50/60 Hz
<b>Power Consumption</b>	20 W
<b>Dimensions (W x H x D)</b>	480 x 45.2 x 285 mm (18-7/8" x 1-3/4" x 11-1/4")
<b>Weight</b>	3.6 kg (7 lbs 15 oz)

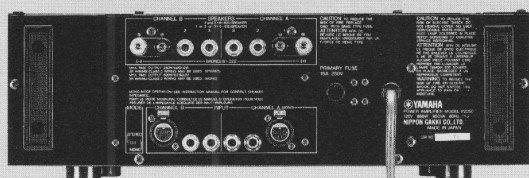


# P2250/2150/1250/1150/ 2075

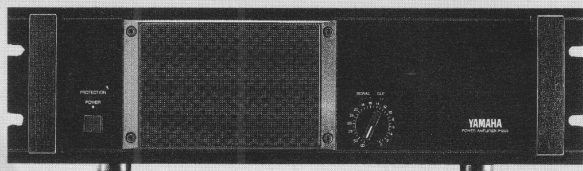
## POWER AMPLIFIERS



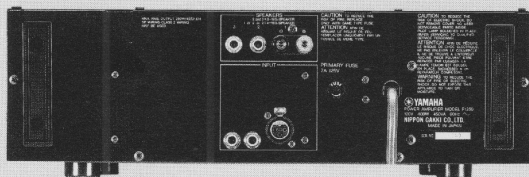
P2250



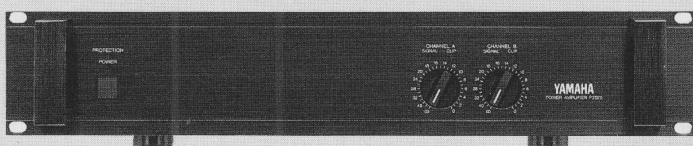
- **Professional 2-channel power amplifiers, ideal for a wide range of applications.**



P1250



- **Traditional Yamaha quality and rugged construction in a pair of lightweight, fully portable single channel amplifiers.**



P2075



- **Professional amplifier reliability with "audiophile" quality sound.**
- **Wide bandwidth, low noise, low distortion and superb transient definition.**
- **Suitable for sound reinforcement, recording, and musical instrument applications.**

### FEATURES

#### ■ P2250/2150

- Input channels have both XLR and phone jack inputs, in parallel, eliminating the need for adapters and permitting multiple amplifiers to be "slaved" to a given source.
- A rear panel switch reconfigures the units for stereo or mono mode, avoiding the need for special cables and splitter transformers; in mono mode, the amps can be BTL-coupled for higher power output.
- LED Clip indicator on each channel lights when distortion reaches or exceeds approximately 1%, indicating that the amplifier is being driven by excessively high inputs.
- Wide frequency response and powerband width (to 50kHz and beyond) ensure transparent highs.
- Multiple protection circuits include DC offset sensor with auto disconnect, thermal protection, relay muting circuit, and PC limiter; front panel LEDs display status.
- Each output channel has a pair of binding posts and 2 standard 1/4" phone jacks for broad compatibility.
- Detented, calibrated, precise input attenuators give accurate and repeatable level adjustments for fast setups.
- Solid-state circuitry throughout for optimum durability.

#### ■ P1250/1150

- Multiple protection circuits include relay muting circuit, DC offset sensing and disconnect, thermal protection, and PC limiting.
- LED Clip indicator lights when amplifier is being driven by excessively high inputs.
- Detented, calibrated, precise input attenuator gives accurate and repeatable level adjustments for fast setups.
- LED signal indicator above the input attenuator indicates the presence of an audio signal.
- Input has both XLR and phone jack connectors in parallel, eliminating the need for adapters and permitting multiple amplifiers to be "slaved" to a given source.
- Output connections are made via a pair of heavy-duty binding post type speaker connectors or 2 parallel-wired standard 1/4" phone jack connectors for full professional compatibility.
- Rugged solid-state circuitry to handle sustained operation at full power output.
- Forced-air cooling with automatic fan speed control provides reliable, efficient cooling regardless of application.

#### ■ P2075

- Easy-operation recessed input attenuators with 31 calibrated, detented positions.
- Electronically balanced differential input circuits for minimum hum-susceptibility with shielded 3-wire input cables.
- XLR inputs combine the advantages of electrostatic and electromagnetic noise rejection.
- Phone jack inputs also provided for fast, compatible connection to equipment with phone jack outputs.
- Output circuitry fully protected from shorts and overload. The speakers are relay-protected against turn-on transients and DC offset.
- 5-way binding post output connections as well as phone jack outputs for broad compatibility.
- Rated for 4-ohm or higher impedance loads.
- Convenient power cord crammer on rear panel enable amp to be set "on end" without damage to connectors.



## GENERAL SPECIFICATIONS

## I. Performance Characteristics

Power Amplifier	P1150, P1250 (MONO)		P2150, P2250 (STEREO)				P2075	
	RATINGS	CONDITIONS	RATINGS	CONDITIONS		RATINGS	CONDITIONS	RATINGS
Power Output Level	<b>P1150</b> 105W RL = 8Ω, f = 1kHz, THD = 0.05% 100W RL = 8Ω, f = 20Hz to 20kHz, THD = 0.05% 165W RL = 4Ω, f = 1kHz, THD = 0.05% 150W RL = 4Ω, f = 20Hz to 20kHz, THD = 0.05% <b>P1250</b> 185W RL = 8Ω, f = 1kHz, THD = 0.05% 170W RL = 8Ω, f = 20Hz to 20kHz, THD = 0.05% 265W RL = 4Ω, f = 1kHz, THD = 0.05% 250W RL = 4Ω, f = 20Hz to 20kHz, THD = 0.05%		(STEREO) <b>P2150</b> 105W + 105W RL = 8Ω, f = 1kHz, THD = 0.05% 100W + 100W RL = 8Ω, f = 20Hz to 20kHz, THD = 0.05% 165W + 165W RL = 4Ω, f = 1kHz, THD = 0.05% 150W + 150W RL = 4Ω, f = 20Hz to 20kHz, THD = 0.05% (BTL-MONO) <b>P2150</b> 250W RL = 16Ω, f = 1kHz, THD = 0.05% 220W RL = 16Ω, f = 20Hz to 20kHz, THD = 0.05% 330W RL = 8Ω, f = 1kHz, THD = 0.05% 300W RL = 8Ω, f = 20Hz to 20kHz, THD = 0.05%	<b>P2250</b> 185W + 185W RL = 8Ω, f = 1kHz, THD = 0.05% 170W + 170W RL = 8Ω, f = 20Hz to 20kHz, THD = 0.05% 265W + 265W RL = 4Ω, f = 1kHz, THD = 0.05% 250W + 250W RL = 4Ω, f = 20Hz to 20kHz, THD = 0.05% <b>P2250</b> 370W RL = 16Ω, f = 1kHz, THD = 0.05% 340W RL = 16Ω, f = 20Hz to 20kHz, THD = 0.05% 530W RL = 8Ω, f = 1kHz, THD = 0.05% 500W RL = 8Ω, f = 20Hz to 20kHz, THD = 0.05%		<b>P2075</b> 50W + 50W RL = 8Ω, f = 20Hz to 20kHz, THD ≤ 0.05% 75W + 75W RL = 4Ω, f = 20Hz to 20kHz, THD ≤ 0.1%  100W RL = 16Ω, f = 20Hz to 20kHz, THD ≤ 0.05% 150W RL = 8Ω, f = 20Hz to 20kHz, THD ≤ 0.1%		
	Frequency Response	0 <sup>-0</sup> dB f = 10Hz to 50kHz, RL = 8Ω, PO = 1W	0 <sup>-0</sup> dB f = 10Hz to 50kHz, RL = 8Ω, PO = 1W					+0, -1dB, f = 10Hz to 30kHz, RL = 8Ω, PO = 1W
Power Band Width	<b>P1150</b> 10Hz to 100kHz PO = 55W, RL = 8Ω, THD ≤ 0.1% 100kHz PO = 75W, RL = 4Ω, THD ≤ 0.1% <b>P1250</b> PO = 85W, RL = 8Ω, THD ≤ 0.1% PO = 125W, RL = 4Ω, THD ≤ 0.1%		(STEREO) <b>P2150</b> 10Hz to 50kHz PO = 55W, RL = 8Ω, THD ≤ 0.1% PO = 75W, RL = 4Ω, THD ≤ 0.1% (BTL-MONO) <b>P2150</b> 10Hz to 50kHz PO = 110W, RL = 16Ω, THD ≤ 0.1% PO = 150W, RL = 8Ω, THD ≤ 0.1%	<b>P2250</b> PO = 85W, RL = 8Ω, THD ≤ 0.1% PO = 125W, RL = 4Ω, THD ≤ 0.1% <b>P2250</b> PO = 170W, RL = 16Ω, THD ≤ 0.1% PO = 250W, RL = 8Ω, THD ≤ 0.1%		(THD ≤ 0.1%) 10Hz to 50kHz P <sub>0</sub> = 25W, RL = 8Ω, 10Hz to 50kHz P <sub>0</sub> = 38W, RL = 4Ω 10Hz to 30kHz P <sub>0</sub> = 50W, RL = 16Ω, 10Hz to 30kHz P <sub>0</sub> = 75W, RL = 8Ω		
	THD	<b>P1150</b> ≤ 0.003% PO = 55W, f = 1kHz, RL = 8Ω ≤ 0.007% PO = 55W, f = 20Hz to 20kHz, RL = 8Ω ≤ 0.005% PO = 75W, f = 1kHz, RL = 4Ω ≤ 0.01% PO = 75W, f = 20Hz to 20kHz, RL = 4Ω <b>P1250</b> ≤ 0.003% PO = 85W, f = 1kHz, RL = 8Ω ≤ 0.007% PO = 85W, f = 20Hz to 20kHz, RL = 8Ω ≤ 0.005% PO = 125W, f = 1kHz, RL = 4Ω ≤ 0.01% PO = 125W, f = 20Hz to 20kHz, RL = 4Ω	(STEREO) <b>P2150</b> ≤ 0.003% PO = 55W, f = 1kHz, RL = 8Ω ≤ 0.007% PO = 55W, f = 20Hz to 20kHz, RL = 8Ω ≤ 0.005% PO = 75W, f = 1kHz, RL = 4Ω ≤ 0.01% PO = 75W, f = 20Hz to 20kHz, RL = 4Ω (BTL-MONO) <b>P2150</b> ≤ 0.003% PO = 110W, f = 1kHz, RL = 16Ω ≤ 0.007% PO = 110W, f = 20Hz to 20kHz, RL = 16Ω ≤ 0.005% PO = 150W, f = 1kHz, RL = 8Ω ≤ 0.01% PO = 150W, f = 20Hz to 20kHz, RL = 8Ω	<b>P2250</b> ≤ 0.003% PO = 85W, f = 1kHz, RL = 8Ω ≤ 0.007% PO = 85W, f = 20Hz to 20kHz, RL = 8Ω ≤ 0.005% PO = 125W, f = 1kHz, RL = 4Ω ≤ 0.01% PO = 125W, f = 20Hz to 20kHz, RL = 4Ω <b>P2250</b> ≤ 0.003% PO = 85W, f = 1kHz, RL = 16Ω ≤ 0.007% PO = 85W, f = 20Hz to 20kHz, RL = 16Ω ≤ 0.005% PO = 125W, f = 1kHz, RL = 8Ω ≤ 0.01% PO = 125W, f = 20Hz to 20kHz, RL = 8Ω		≤ 0.01% P <sub>0</sub> = 25W, f = 1kHz, RL = 8Ω ≤ 0.05% P <sub>0</sub> = 25W, f = 20Hz to 20kHz, RL = 8Ω ≤ 0.01% P <sub>0</sub> = 38W, f = 1kHz, RL = 4Ω ≤ 0.05% P <sub>0</sub> = 38W, f = 20Hz to 20kHz, RL = 4Ω <b>P2250</b> ≤ 0.01% P <sub>0</sub> = 50W, f = 1kHz, RL = 16Ω ≤ 0.05% P <sub>0</sub> = 50W, f = 20Hz to 20kHz, RL = 16Ω ≤ 0.01% P <sub>0</sub> = 75W, f = 1kHz, RL = 8Ω ≤ 0.05% P <sub>0</sub> = 75W, f = 20Hz to 20kHz, RL = 8Ω		
Intermodulation Distortion	<b>P1150</b> ≤ 0.005% PO = 55W, RL = 8Ω, 60Hz 7kHz = 4:1 ≤ 0.01% PO = 75W, RL = 4Ω, 60Hz 7kHz = 4:1 <b>P1250</b> ≤ 0.005% PO = 85W, RL = 8Ω, 60Hz 7kHz = 4:1 ≤ 0.01% PO = 125W, RL = 4Ω, 60Hz 7kHz = 4:1	(STEREO) <b>P2150</b> ≤ 0.005% PO = 55W, RL = 8Ω, 60Hz 7kHz = 4:1 ≤ 0.01% PO = 75W, RL = 4Ω, 60Hz 7kHz = 4:1 (BTL-MONO) <b>P2150</b> ≤ 0.01% PO = 110W, RL = 16Ω, 60Hz 7kHz = 4:1 ≤ 0.01% PO = 150W, RL = 8Ω, 60Hz 7kHz = 4:1	<b>P2250</b> ≤ 0.005% PO = 85W, RL = 4Ω, 60Hz 7kHz = 4:1 ≤ 0.01% PO = 125W, RL = 4Ω, 60Hz 7kHz = 4:1 <b>P2250</b> ≤ 0.01% PO = 170W, RL = 16Ω, 60Hz 7kHz = 4:1 ≤ 0.01% PO = 250W, RL = 8Ω, 60Hz 7kHz = 4:1		(70Hz = 4:1) ≤ 0.05% P <sub>0</sub> = 25W, RL = 8Ω, ≤ 0.05% P <sub>0</sub> = 38W, RL = 4Ω ≤ 0.05% P <sub>0</sub> = 50W, RL = 16Ω, ≤ 0.05% P <sub>0</sub> = 75W, RL = 8Ω			
Channel Separation	≥ 90dB ≥ 70dB		f = 1kHz f = 20Hz to 20kHz RL = 8Ω, ATT. MAX. INPUT Short PO = -3dB Point from Nominal Power		≥ 100 f = 1kHz, RL = 8Ω, ≥ 70		(INPUT Short, ATT. Max, RL = 8Ω) P <sub>0</sub> = -3dB point from nominal power ≥ 80dB f = 1kHz, ≥ 100 f = 1kHz, RL = 8Ω, ≥ 70 f = 20Hz to 20kHz, RL = 8Ω	
Damping Factor	≥ 110 RL = 8Ω, f = 1kHz		≥ 110 RL = 8Ω, f = 1kHz		≥ 100 f = 1kHz, RL = 8Ω, ≥ 70			
S/N Ratio	≥ 110dB INPUT Short @ 12.7kHz, -6dB/oct. LPF ≥ 115dB INPUT Short @ IHF A Network		(STEREO) ≥ 110dB INPUT Short @ 12.7kHz, -6dB/oct. LPF ≥ 115dB INPUT Short @ IHF A Network (BTL-MONO) ≥ 106dB INPUT Short @ 12.7kHz, -6dB/oct. LPF ≥ 110dB INPUT Short @ IHF A Network PO = Nominal Power, RL = 4Ω (STEREO) RL = 8Ω (BTL-MONO)		≥ 100dB INPUT Short @ 12.7kHz LPF ≥ 105dB INPUT Short @ IHF-A Network ≥ 95dB INPUT Short @ 12.7kHz LPF ≥ 100dB INPUT Short @ IHF-A Network		≥ 100dB INPUT Short @ 12.7kHz LPF ≥ 105dB INPUT Short @ IHF-A Network ≥ 95dB INPUT Short @ 12.7kHz LPF ≥ 100dB INPUT Short @ IHF-A Network	
Hum & Noise	≤ -80dBm ATT. min. @ 12.7kHz, -6dB/oct. LPF ≤ -90dBm ATT. min. @ IHF-A Network		≤ -80dBm ATT. min. @ 12.7kHz, -6dB/oct. LPF ≤ -90dBm ATT. min. @ IHF-A Network		≥ -78dBm ATT. Min. @ 12.7kHz, LPF ≥ -86dBm ATT. Min. @ IHF-A Network		≥ -78dBm ATT. Min. @ 12.7kHz, LPF ≥ -86dBm ATT. Min. @ IHF-A Network	
Slew Rate	±50V/μsec. RL = 8Ω, Full Swing		±50V (STEREO) RL = 8Ω, Full Swing ±90V (BTL-MONO) RL = 16Ω, Full Swing		14V/μsec. RL = 8Ω, Full Swing 26V/μsec. RL = 16Ω, Full Swing		14V/μsec. RL = 8Ω, Full Swing 26V/μsec. RL = 16Ω, Full Swing	
Input Sensitivity	<b>P1150</b> +4dBm PO = 150W, RL = 4Ω, ATT. Max. f = 1kHz <b>P1250</b> +4dBm PO = 250W, RL = 4Ω, ATT. Max. f = 1kHz		<b>P2150</b> +4dBm PO = 150W, RL = 4Ω, ATT. Max. f = 1kHz <b>P2250</b> +4dBm PO = 250W, RL = 4Ω, ATT. Max. f = 1kHz		+4dBm (1.23V rms) P <sub>0</sub> = 75W, RL = 4Ω, ATT. Max., f = 1kHz		+4dBm (1.23V rms) P <sub>0</sub> = 75W, RL = 4Ω, ATT. Max., f = 1kHz	
Voltage Gain	<b>P1150</b> 26.0dB ATT. Max. f = 1kHz <b>P1250</b> 28.3dB ATT. Max. f = 1kHz		<b>P2150</b> 26.0dB ATT. Max. f = 1kHz <b>P2250</b> 28.3dB ATT. Max. f = 1kHz		23.0dB f = 1kHz, RL = 4Ω, ATT. Max.		23.0dB f = 1kHz, RL = 4Ω, ATT. Max.	
Input Impedance	≥ 15kΩ, Balanced input, Unbalanced input ATT. Max.		≥ 15kΩ, Balanced input, Unbalanced input ATT. Max.		≥ 15kΩ, Balanced or unbalanced		≥ 15kΩ, Balanced or unbalanced	

P1150, P1250, P2150, P2250			P2075	
Indicator Circuitry	Signal indicator	Green LED f = 20Hz to 20kHz, VO ≥ 2V	Indicators	
	Clipping indicator	Red LED THD ≥ 1%	Green LED f = 20Hz to 20kHz, VO ≥ 2V	
Protection Circuitry	Protection indicator	Red LED During the protective circuit and muting operation	Red LED THD ≥ 1%	
	Pilot indicator	Red LED Power ON	Red LED during protection or muting is on	
Relay muting time	6 ± 2s	After power ON	≥ 60°C Heat sink temperature	
	DC Disconnection	Output voltage	Red LED Power ON	
Thermal protection	≥ 85°C	Heat sink temperature	Protection circuits	
	PC Limiter	RL ≤ 2Ω	6 ± 2sec. After Power ON DC	
Forced-Air Fan Circuitry	Fan speed switching	High speed run, Heat sink temperature	DC ± 2V Output Voltage	
	Temperature	Restoration of a low speed run, Heat sink temperature	≥ 85°C Heat sink temperature (General model)	
			ON RL = ≤ 2Ω	

## II. Controls

P1150, P1250, P2150, P2250			P2075	
Front Panel	Power switch	Push ON/ Push OFF	Front 2x31 step INPUT Attenuator, Push ON/ Push OFF POWER switch	
	Input attenuators	32 detent positions in 0 to -20dB 1dB step -20 to -30dB, 2dB steps (-33, -37, -42dB, -50dB, -60dB, -∞)	Rear MONO/STEREO MODE switch, IN/OUT Transformer switch, Voltage Selector switch (General model only)	
Rear Panel	Mode switch	STEREO/MONO (P2150 and P2250 only)		

## III. Power Requirements and Consumption

P1150, P1250, P2150, P2250			P2075	
Power Requirements	120 VAC, 60Hz	U.S. & Canadian models	General model	220/240V AC, 50/60Hz
	220/240 VAC, 50/60 Hz	General (and other) models	U.S. & Canadian models	120V AC, 60Hz
Power Consumption	250W, 300VA	<b>P1150</b> U.S. & Canadian models General (and other) models	General model	400W
	400W, 450VA	<b>P1250</b> U.S. & Canadian models General (and other) models	U.S. & Canadian models	250W, 300VA
	600W	<b>P2150</b> U.S. & Canadian models General (and other) models		
	500W, 600VA	<b>P2250</b> U.S. & Canadian models General (and other) models		
	800W			
	850W, 950VA			
	1300W			

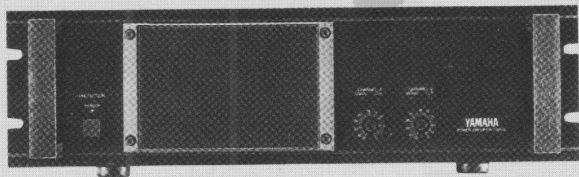
## IV. Dimensions and Weight

P1150, P1250, P2150, P2250		P2075
Dimensions (W x H x D)	480mm x 132mm x 423mm (18 7/8" x 5 1/4" x 16 3/4")	480 x 98 x 364 (18 7/8" x 3 7/8" x 14 3/8")
Weight	13.0kg (28.9 lbs) (P1150) 15.0kg (33.0 lbs) (P1250) 17.0kg (37.4 lbs) (P2150) 19.0kg (41.8 lbs) (P2250)	9.5 kg (20.9 lbs)
Rack Mount	In conformance with BTS	

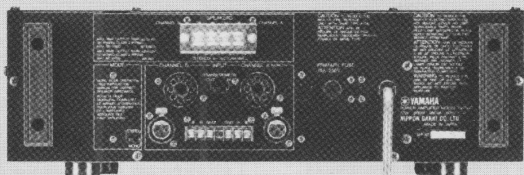


# P2250C/2150C/1250C/1150C 2075C

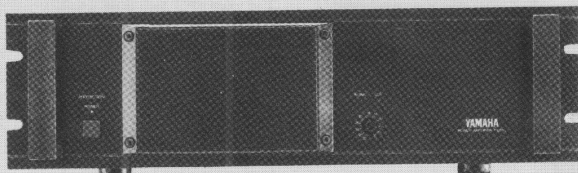
## COMMERCIAL POWER AMPLIFIERS



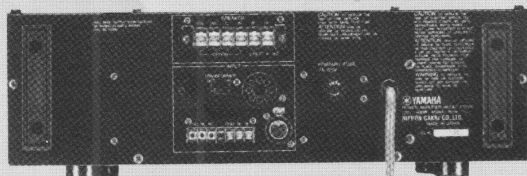
P2250C



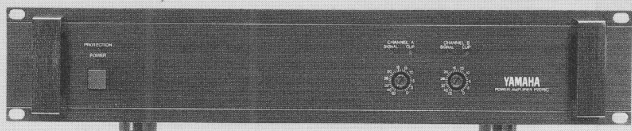
- **2-channel power amplifiers ideal for a wide variety of commercial applications.**



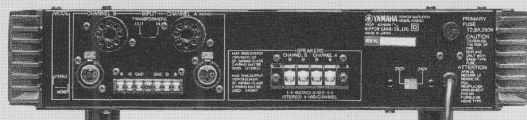
P1250C



- **Single-channel power amplifiers designed specifically for a broad range of demanding commercial applications.**



P2075C



- **Feature-packed for convenience and reliability.**
- **Ideal for all commercial installations.**

## FEATURES

## ■ P2250C/2150C

- 170 continuous watts per channel (P2150C, 100 watts) average RMS into 8 ohms.
- Multiple protection circuits include relay-muting time, DC offset sensing and disconnect, thermal protection, and PC limiting.
- Detented, calibrated, precise input attenuators.
- LED Clip indicators on each input channel light when amplifier is being driven into distortion.
- Input channels have both XLR connectors and a 3-way barrier strip-type connector for broad compatibility.
- Rear panel transformer sockets permit transformer-isolated input operation.
- A rear panel switch reconfigures the units for stereo or mono mode; in mono mode the amps can be BTL coupled for higher power output.
- Barrier strip-type speaker connections on each output channel for broad compatibility.
- Rugged solid-state circuitry and forced-air cooling to handle sustained operation at full power output.

## ■ P1250C/1150C

- 170 continuous watts (P1150C, 100 watts) average RMS into 8 ohms.
- Ultra-low 0.05% THD at maximum continuous output and a full 115dB signal/noise ratio.
- Multiple protection circuits include relay-muting time, DC offset sensing and disconnect, thermal protection, and PC limiting.
- LED Clip-indicator lights when amplifier is being driven into distortion.
- Precise, detented, calibrated input attenuators give accurate and repeatable level adjustments for fast setups.
- Input channel has both an XLR connector and a 3-way barrier strip type connector for broad compatibility.
- Rear panel transformer sockets permit transformer-isolated input operation.
- Optional output transformer provides 70- or 25-volt taps for large distributed institutional PA systems.
- Rugged solid-state circuitry and forced air cooling to handle sustained operation at full power output.

## ■ P2075C

- 75 continuous watts per channel average RMS into 4 ohms (Stereo mode).
- Mono-Stereo selectable operation: Stereo for independent channels: Mono for bridged mono operation through channel A.
- Reliable AC coupled amplifier circuitry designed specifically for commercial installation.
- Recessed input attenuators with 31 calibrated, detented positions for precise control and noise-free transition from maximum level (zero attenuation).
- A special plug-in isolation transformer socket and in/out switch for use with an optional plug-in isolation transformer for extra ground isolation and/or common mode rejection.
- Balanced XLR and 1/4-inch phone jacks, plus binding post and phone jack output connections.
- Comprehensive overload, transient, and DC offset protection circuitry, plus output relay speaker protection.



## GENERAL SPECIFICATIONS

## I. Performance Characteristics

Power Amplifier	P1150C, P1250C (MONO)		P2150C, P2250C (STEREO)				P2075C	
	RATINGS	CONDITIONS	RATINGS	CONDITIONS	RATINGS	CONDITIONS	RATINGS	CONDITIONS
Power Output Level	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	105W RL=8Ω, f=1kHz, THD=0.05% 100W RL=8Ω, f=20Hz to 20kHz, THD=0.05% 165W RL=4Ω, f=1kHz, THD=0.05% 150W RL=4Ω, f=20Hz to 20kHz, THD=0.05%		(STEREO) 105W+105W RL=8Ω, f=1kHz, THD=0.05% 100W+100W RL=8Ω, f=20Hz to 20kHz, THD=0.05% 165W+165W RL=4Ω, f=1kHz, THD=0.05% 150W+150W RL=4Ω, f=20Hz to 20kHz, THD=0.05%		185W+185W RL=8Ω, f=1kHz, THD=0.05% 170W+170W RL=8Ω, f=20Hz to 20kHz, THD=0.05% 265W+265W RL=4Ω, f=1kHz, THD=0.05% 250W+250W RL=4Ω, f=20Hz to 20kHz, THD=0.05%		(STEREO) 50W+50W RL=8ohms, f=20Hz to 20kHz, THD≤0.05% 75W+75W RL=4ohms, f=20Hz to 20kHz, THD≤0.1%	
Frequency Response	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	185W RL=8Ω, f=1kHz, THD=0.05% 170W RL=8Ω, f=20Hz to 20kHz, THD=0.05% 265W RL=4Ω, f=1kHz, THD=0.05% 250W RL=4Ω, f=20Hz to 20kHz, THD=0.05%		(BTL-MONO) 250W RL=16Ω, f=1kHz, THD=0.05% 220W RL=16Ω, f=20Hz to 20kHz, THD=0.05% 330W RL=8Ω, f=1kHz, THD=0.05% 300W RL=8Ω, f=20Hz to 20kHz, THD=0.05%		370W RL=16Ω, f=1kHz, THD=0.05% 340W RL=16Ω, f=20Hz to 20kHz, THD=0.05% 530W RL=8Ω, f=1kHz, THD=0.05% 500W RL=8Ω, f=20Hz to 20kHz, THD=0.05%		(BTL-MONO) 100W RL=16ohms, f=20Hz to 20kHz, THD≤0.05% 150W RL=8ohms, f=20Hz to 20kHz, THD≤0.1%	
Power Band Width	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	10Hz to 100kHz PO=55W, RL=8Ω, THD≤0.1% PO=75W, RL=4Ω, THD≤0.1%		(STEREO) 10Hz to 50kHz PO=55W, RL=8Ω, THD≤0.1% PO=75W, RL=4Ω, THD≤0.1%		PO=85W, RL=8Ω, THD≤0.1% PO=125W, RL=4Ω, THD≤0.1%		(STEREO) 10Hz to 50kHz Po=25W, RL=8ohms, 10Hz to 50kHz Po=38W, RL=4ohms	
THD	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	≤0.003% PO=55W, f=1kHz, RL=8Ω ≤0.007% PO=55W, f=20Hz to 20kHz, RL=8Ω ≤0.005% PO=75W, f=1kHz, RL=4Ω ≤0.01% PO=75W, f=20Hz to 20kHz, RL=4Ω		(STEREO) ≤0.003% PO=55W, f=1kHz, RL=8Ω ≤0.007% PO=55W, f=20Hz to 20kHz, RL=8Ω ≤0.005% PO=75W, f=1kHz, RL=4Ω ≤0.01% PO=75W, f=20Hz to 20kHz, RL=4Ω		≤0.003% PO=85W, f=1kHz, RL=8Ω ≤0.007% PO=85W, f=20Hz to 20kHz, RL=8Ω ≤0.005% PO=125W, f=1kHz, RL=4Ω ≤0.01% PO=125W, f=20Hz to 20kHz, RL=4Ω		(STEREO) ≤0.01% Po=25W, f=1kHz, RL=8ohms ≤0.05% Po=25W, f=20Hz to 20kHz, RL=8ohms ≤0.01% Po=38W, f=1kHz, RL=4ohms ≤0.05% Po=38W, f=20Hz to 20kHz, RL=4ohms	
Intermodulation Distortion	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	≤0.005% PO=55W, RL=8Ω, 60Hz: 7kHz=4:1 ≤0.01% PO=75W, RL=4Ω, 60Hz: 7kHz=4:1		(STEREO) ≤0.005% PO=55W, RL=8Ω, 60Hz: 7kHz=4:1 ≤0.01% PO=75W, RL=4Ω, 60Hz: 7kHz=4:1		≤0.005% PO=85W, RL=8Ω, 60Hz: 7kHz=4:1 ≤0.01% PO=125W, RL=4Ω, 60Hz: 7kHz=4:1		(STEREO) (70 Hz: 7 kHz=4:1) ≤0.05% Po=25W, RL=8ohms ≤0.05% Po=38W, RL=4ohms	
Channel Separation	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	≥90dB f=1kHz ≥70dB f=20Hz to 20kHz PO=3dB Point from Nominal Power		(BTL-MONO) ≥90dB f=1kHz ≥70dB f=20Hz to 20kHz PO=3dB Point from Nominal Power		≥90dB f=1kHz ≥70dB f=20Hz to 20kHz PO=3dB Point from Nominal Power		≥80dB f=1kHz ≥70dB f=20Hz to 20kHz	
Damping Factor	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	≥110 RL=8Ω, f=1kHz		≥110 RL=8Ω, f=1kHz		≥110 RL=8Ω, f=1kHz		≥100 f=1kHz, RL=8ohms ≥70 f=20Hz to 20kHz, RL=8ohms	
S/N Ratio	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	≥110dB INPUT Short @ 12.7kHz, -6dB/oct, LPF ≥115dB INPUT Short @ IHF-A Network		(STEREO) ≥110dB INPUT Short @ 12.7kHz, -6dB/oct, LPF ≥115dB INPUT Short @ IHF-A Network		≥110dB INPUT Short @ 12.7kHz, -6dB/oct, LPF ≥115dB INPUT Short @ IHF-A Network		(STEREO) ≥100dB INPUT Short @ 12.7kHz LPF ≥105dB INPUT Short @ IHF-A Network	
Hum & Noise	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	≤-80dBm ATT. min. @ 12.7kHz, -6dB/oct, LPF ≤-90dBm ATT. min. @ IHF-A Network		≤-80dBm ATT. min. @ 12.7kHz, -6dB/oct, LPF ≤-90dBm ATT. min. @ IHF-A Network		≤-80dBm ATT. min. @ 12.7kHz, -6dB/oct, LPF ≤-90dBm ATT. min. @ IHF-A Network		≤-80dBm ATT. min. @ 12.7kHz, -6dB/oct, LPF ≤-90dBm ATT. min. @ IHF-A Network	
Slew Rate	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	±50V/μsec. RL=8Ω, Full Swing		±50V (STEREO) RL=8Ω, Full Swing ±90V (BTL-MONO) RL=16Ω, Full Swing		±50V (STEREO) RL=8Ω, Full Swing ±90V (BTL-MONO) RL=16Ω, Full Swing		14V/μsec. (STEREO) RL=8ohms 26V/μsec. (BTL-MONO) RL=16ohms	
Input Sensitivity	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	+4dBm PO=150W, RL=4Ω, ATT. Max. f=1kHz		+4dBm PO=150W, RL=4Ω, ATT. Max. f=1kHz		+4dBm PO=150W, RL=4Ω, ATT. Max. f=1kHz		+4dBm (1.23V rms) Po=75W, RL=4ohms, ATT. Max., f=1kHz	
Voltage Gain	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	26.0dB ATT. Max. f=1kHz		26.0dB ATT. Max. f=1kHz		26.0dB ATT. Max. f=1kHz		23.0dB f=1kHz, RL=4ohms, ATT. Max.	
Input Impedance	<b>P1150C</b>		<b>P2150C</b>		<b>P2250C</b>		<b>P2075C</b>	
	≥15kΩ, Balanced input, Unbalanced input ATT. Max.		≥15kΩ, Balanced input, Unbalanced input ATT. Max.		≥15kΩ, Balanced input, Unbalanced input ATT. Max.		≥15kΩ, Balanced/Unbalanced	

	P1150C, P1250C, P2150C, P2250C	P2075C
<b>Indicator Circuitry</b>	Green LED f=20 Hz to 20 kHz, VO ≥ 2V Red LED THD ≥ 1% Red LED During protective circuit and muting operation Red LED Power ON	Signal: Green LED f=20Hz to 20kHz, VO ≥ 2V Clipping: Red LED THD ≥ 1% Protection: Red LED during the protection or muting is on. Protection: ≥60°C Heat sink temperature Pilot: Red LED Power ON
<b>Protection Circuitry</b>	Relay muting time 6 ± 2s DC Disconnection DC ± 2V Thermal protection ≥ 85°C PC Limiter ON RL ≤ 2Ω	
<b>Forced-Air Fan Circuitry</b>	Fan speed switching ≥ 60°C Temperature ≤ 45°C	

## II. Controls

	P1150C, P1250C, P2150C, P2250C	P2075C
<b>Front Panel</b>	Power switch Push ON/ Push OFF 32 detent position in 0 to -20dB 1dB step Input attenuators -20 to -30dB, 2dB steps (-33, -37, -42dB, -50dB, -60dB, -∞)	2 x 31 step INPUT Attenuator, Push ON/ Push OFF POWER switch.
<b>Rear Panel</b>	Mode switch STEREO/MONO (P2150C and P2250C only) Transformer switch IN/OUT	MONO/STEREO MODE switch, IN/OUT Transformer switch, Voltage Selector switch (General model only)

## III. Power Requirements and Consumption

	P1150C, P1250C, P2150C, P2250C	P2075C
<b>Power Requirements</b>	U.S. & Canadian models 120 VAC, 60Hz General (and other) models 220/240 VAC, 50/60 Hz	120V AC, 60Hz 220/240V AC, 50/60Hz
<b>Power Consumption</b>	U.S. & Canadian models 250W, 300VA General (and other) models 400W U.S. & Canadian models 400W, 450VA General (and other) models 600W U.S. & Canadian models 500W, 600VA General (and other) models 800W U.S. & Canadian models 850W, 950VA General (and other) models 1300W	250W, 300VA 400W

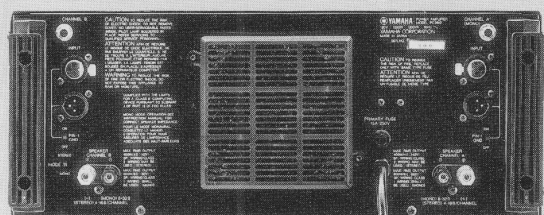
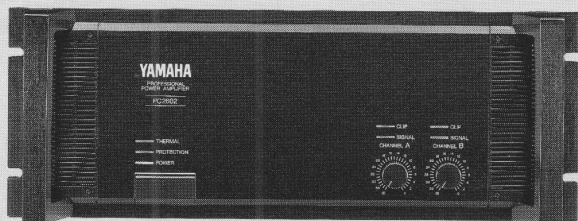
## IV. Dimensions and Weight

	P1150C, P1250C, P2150C, P2250C	P2075C
<b>Dimensions (W x H x D)</b>	480mm x 132mm x 423mm (18 7/8" x 5 1/4" x 16 3/4")	480 x 98 x 364 mm (18 7/8" x 3 7/8" x 14 3/8")
<b>Weight</b>	13.0kg (28.6 lbs) (P1150C) 15.0kg (33.0 lbs) (P1250C) 17.0kg (37.4 lbs) (P2150C) 19.0kg (41.8 lbs) (P2250C)	9.5 kg (21 lbs)
<b>Rack Mount</b>	In conformance with BTS	

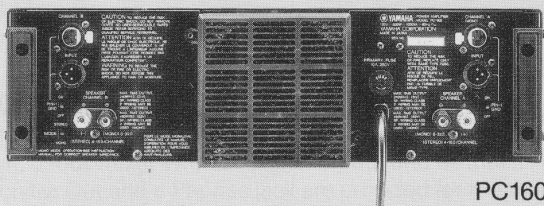
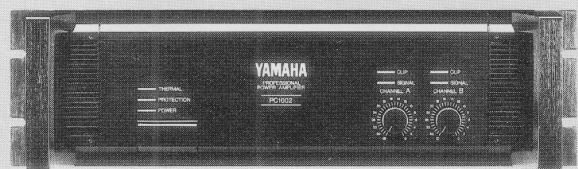
\*BRT15K Input Transformer and P150T/P250T Output Transformers are optionally available.

# PC2602/2602M/1602

## PROFESSIONAL POWER AMPLIFIERS



PC2602/2602M



PC1602

### FEATURES

#### ■ PC2602/2602M/1602

- Stereo operation of 260 watts per channel (160 watts on the PC1602) and 800 watts (480 watts on the PC1602) in BTL-coupled monaural operation, into 8-ohm loads.
- Comprehensive protection circuitry to guard against damage to amplifier itself as well as the speaker system including a muting circuit, DC sensing circuitry, ultra-low frequency sensing (in the PC2602/2602M) and thermal protection.
- Power limiting feature automatically reduces output power when improper connections or accidental shorts result in a speaker-terminal load of 1 ohm or less.
- A red protection indicator that lights if any of the amplifier's protection circuits are activated, and automatically goes out when normal operation has been resumed.
- Clip indicators light when output distortion of the corresponding channel exceeds approximately 1%.
- 26-segment backlit LCD power meters, calibrated directly in watts (into 8 ohms), provide extremely fast, precise power level monitoring (PC2602M only).
- An extremely efficient forced cooling system with a cooling fan that automatically switches on when heat sink temperatures exceed 60 degrees C and automatically shuts off when the temperature drops below 45°.
- Independent 31-position detented input attenuators for easy level matching and balancing.
- Balanced XLR input connectors (male and female) for secure performance and optimum compatibility with professional sound equipment. The PC2602 and PC2602M also include balanced TRS phone jacks.
- Heavy-duty binding-post speaker terminals are provided for maximum connection reliability and cable compatibility.

- **High-power amplification for modern professional sound reinforcement applications.**
- **Smooth, clean output of even the most demanding digital music sources.**



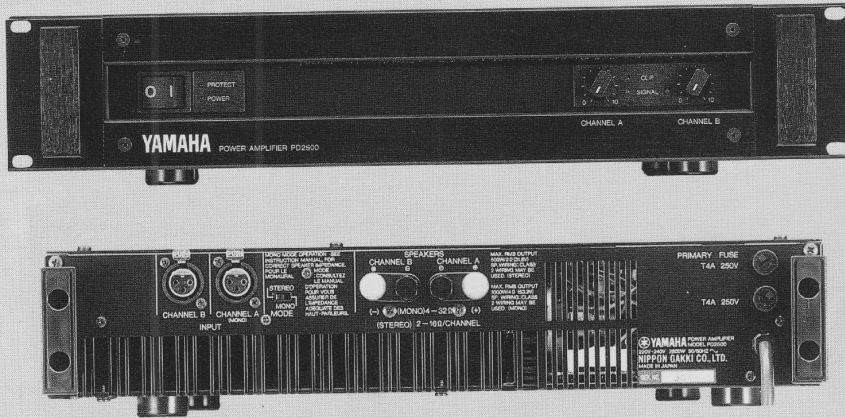
## GENERAL SPECIFICATIONS

	PC2602/PC2602M	PC1602
<b>Power Output Level</b> (Continuous average sine wave power with less than 0.05% THD, 20 Hz ~ 20 kHz)		
Stereo, 8 $\Omega$	260 W+260 W	160 W+160 W
Stereo, 4 $\Omega$	400 W+400 W	240 W+240 W
Mono, 8 $\Omega$	800 W	480 W
<b>Frequency Response</b>	10 Hz ~ 50 kHz $\pm 1$ dB, 8 $\Omega$ , 1 W	10 Hz ~ 50 kHz $\pm 1$ dB, 8 $\Omega$ , 1 W
<b>Total Harmonic Distortion</b>		
Stereo, 8 $\Omega$	Less than 0.007%, 20 Hz ~ 20 kHz, 130 W	Less than 0.005%, 20 Hz ~ 20 kHz, 80 W
Stereo, 4 $\Omega$	Less than 0.015%, 20 Hz ~ 20 kHz, 200 W	Less than 0.015%, 20 Hz ~ 20 kHz, 120 W
Mono, 8 $\Omega$	Less than 0.015%, 20 Hz ~ 20 kHz, 400 W	Less than 0.015%, 20 Hz ~ 20 kHz, 240 W
<b>Intermodulation Distortion</b> (250 Hz/12.5 kHz=1:4)		
Stereo, 8 $\Omega$	Less than 0.005%, 130 W	Less than 0.005%, 80 W
Mono, 8 $\Omega$	Less than 0.007%, 400 W	Less than 0.01%, 240 W
<b>Input Sensitivity</b>	+4 dB (1.23 Vrms)	+4 dB (1.23 Vrms)
	(Input level which produces 260 W output into 8 $\Omega$ )	(Input level which produces 160 W output into 8 $\Omega$ )
<b>Input Impedance</b>	15k $\Omega$	15k $\Omega$
	(Balanced and unbalanced inputs, attenuator max.)	(Balanced and unbalanced inputs, attenuator max.)
<b>Damping Factor</b>	Greater than 250, f=1 kHz, RL=8 $\Omega$	Greater than 200, f=1 kHz, RL=8 $\Omega$
<b>S/N Ratio</b> (Input Shorted)	107 dB, at 12.7 kHz	107 dB, at 12.7 kHz
	110 dB, at IHF-A	110 dB, at IHF-A
<b>Slew Rate</b>		
Stereo, 8 $\Omega$	$\pm 55$ V/ $\mu$ sec Full Swing	$\pm 40$ V/ $\mu$ sec Full Swing
Mono, 16 $\Omega$	$\pm 110$ V/ $\mu$ sec Full Swing	$\pm 60$ V/ $\mu$ sec Full Swing
<b>Channel Separation</b>	85 dB, 20 Hz ~ 20 kHz, 8 $\Omega$ , 130 W	70 dB, 20 Hz ~ 20 kHz, 8 $\Omega$ , 80 W
		90 dB, 1 kHz, 8 $\Omega$ , 80 W
<b>Indicators</b>		
Pilot	RED LED	RED LED
Protection (Muting ON)	RED LED	RED LED
Thermal (Lights when cooling fan is operating)	RED LED	RED LED
Clipping (1% THD)	RED LED	RED LED
Peak Power Meters	26-segment LCD (PS2602M only)	—
Signal	GREEN LED (PC2602 only)	GREEN LED
<b>Front Panel Controls</b>		
Power switch	Push-ON/Push-OFF	Push-ON/Push-OFF
Input attenuators (one per channel)	31 positions	31 positions
<b>Rear Panel Controls</b>		
Mode switch	STEREO/MONO	STEREO/MONO
Pin 1 GND switch (XLR connectors)	ON/OFF	ON/OFF
Voltage selector switch	(General model only)	(General model only)
<b>Protection Circuits</b>		
Muting	6 $\pm$ 2 seconds after power turned ON	6 $\pm$ 2 seconds after power turned ON
DC sense	DC $\pm 2$ V output voltage	DC $\pm 2$ V output voltage
Ultra-low frequency	20 Vpp, f=1 Hz (Po=6.2 W, RL=8 $\Omega$ )	—
Thermal	More than 85° heat sink temperature	More than 85° heat sink temperature
PC limiter	Less than 1.0 $\Omega$ RL	Active when RL is 2 $\Omega$ or more
<b>Cooling Fan Circuit</b>		
Fan ON temperature	60° or more heat sink temp.	60° or more heat sink temp.
Fan OFF temperature	Less than 45° heat sink temp.	Less than 45° heat sink temp.
<b>Power Requirements</b>		
U.S. & Canadian models	120 V AC, 60 Hz	120 V AC, 60 Hz
General model	220/240 V AC, 50/60 Hz	220/240 V AC, 50/60 Hz
<b>Power Consumption</b>		
U.S. & Canadian models	1,000 W (1,200 VA)	800 W (1,000 VA)
General model	1,000 W	800 W
<b>Dimensions (W <math>\times</math> H <math>\times</math> D)</b>	480 $\times$ 184 $\times$ 431 mm (18-7/8" $\times$ 7-1/4" $\times$ 17")	480 $\times$ 140 $\times$ 431 mm (18-7/8" $\times$ 5-1/2" $\times$ 17")
<b>Weight</b>	26 kg (57 lbs)	21.7 kg (47.8 lbs)

**NOTE:** Canadian models must be operated into 8 ohms in stereo mode and 16 ohms in mono mode in accordance with safety regulations.

## PD2500

## PROFESSIONAL AMPLIFIER



PD2500

- **High-power amplification in a 26.5-lb. rack-mount package.**
- **Stereo operation with 500 RMS watts per channel, or 1,000 RMS watts in bridged mono operation.**

## FEATURES

- Advanced high-frequency switching power supply for lightness and high power.
- Stereo operation of 500 watts per channel into 2-ohm loads and a massive, 1,000 watts in bridged mono for extra high-power requirements.
- Ample protection circuitry to guard against damage to amplifier as well as the speaker system including a muting circuit, DC sensing circuitry, and thermal protection.
- Full complement of LED status indicators warn of the presence of 2-volt and over signals at the outputs, and show when the internal muting or protection circuitry is active.

- An extremely efficient forced cooling system with a 2-speed cross-flow fan automatically switches to high speed when heat sink temperatures exceed 60 degrees C and resumes low speed operation when the temperature drops to 45 degrees C.
- Independent 31-position detented input attenuators for easy level matching and balancing.
- Balanced XLR input connectors for secure performance and optimum compatibility with professional sound equipment.

## GENERAL SPECIFICATIONS

## Power Output Level

**STEREO:** 250W + 250W, RL = 8Ω, f = 1kHz, THD = 0.1%  
 360W + 360W, RL = 4Ω, f = 1kHz, THD = 0.1%  
 500W + 500W, RL = 2Ω, f = 1kHz, THD = 0.2%  
**BTL-MONO:** 500W, RL = 16Ω, f = 1kHz, THD = 0.1%  
 700W, RL = 8Ω, f = 1kHz, THD = 0.1%  
 1,000W, RL = 4Ω, f = 1kHz, THD = 0.1%

## Frequency Response

±1.0dB, F = 10Hz ~ 50kHz, RL = 8Ω, Po = 1W

## Power Bandwidth (&lt;0.1% THD)

**STEREO:** 20Hz ~ 50kHz, Po = 125W, RL = 8Ω  
 20Hz ~ 50kHz, Po = 180W, RL = 4Ω  
**BTL-MONO:** 20Hz ~ 50kHz, Po = 250W, RL = 16Ω  
 20Hz ~ 50kHz, Po = 360W, RL = 8Ω

## Total Harmonic Distortion

**STEREO:** 0.007%, Po = 125W, f = 20Hz ~ 20kHz, RL = 8Ω  
 0.015%, Po = 180W, f = 20Hz ~ 20kHz, RL = 4Ω  
 0.03%, Po = 250W, f = 20Hz ~ 20kHz, RL = 2Ω  
**BTL-MONO:** 0.007%, Po = 250W, f = 20Hz ~ 20kHz, RL = 16Ω  
 0.015%, Po = 350W, f = 20Hz ~ 20kHz, RL = 8Ω  
 0.03%, Po = 500W, f = 20Hz ~ 20kHz, RL = 4Ω

## Intermodulation Distortion (60Hz:7kHz = 4:1)

**STEREO:** 0.007%, Po = 125W, RL = 8Ω  
 0.01%, Po = 175W, RL = 4Ω  
 0.02%, Po = 250W, RL = 2Ω  
**BTL-MONO:** 0.007%, Po = 250W, RL = 16Ω  
 0.01%, Po = 350W, RL = 8Ω  
 0.02%, Po = 500W, RL = 4Ω

## Channel Separation

(RL = 8Ω, Po = 1/2Po(max.), ATT MAX, Input 600Ω shunt)  
 ≥90dB, f = 1kHz; ≥70dB, f = 20Hz ~ 20kHz

## Damping Factor ≥250, f = 1kHz, RL = 8Ω

## Signal-to-Noise Ratio

IV 106dB, INPUT 600Ω shunt, at fc = 12.7kHz 6dB/oct. LPF  
 IIV 115dB, INPUT 600Ω shunt, at IHF-A Network

## Slew Rate

**STEREO:** ±55V/μS, RL = 8Ω, full swing  
**BTL-MONO:** ±110V/μS, RL = 16Ω, full swing

## Sensitivity +4dB (1.23V rms), Po = 500W, RL = 2Ω, ATT max., f = 1kHz

## Voltage Gain 28.2dB, ATT max., f = 1kHz

## Input Impedance &gt;15kΩ, ATT max., balanced or unbalanced

## Residual Noise

< -76dBm, ATT min., at fc = 12.7kHz 6dB/oct. LPF  
 < -90dBm, ATT min., at IHF-A Network

## Indicators

**Signal:** Green LED, f = 20Hz ~ 20kHz Vo > 2V; **Clip:** Red LED, THD > 1%; **Protection:** Red LED, lights during protection or muting circuit operation; **Pilot:** Red LED, power ON

## Protection Circuits

**Muting:** 6 ± 2sec. after power turned ON; **DC Sense:** DC ± 2V output voltage; **Ultra-Low** during BTL-MONO operation; **Frequency:** 20Vp-p, f = 1Hz (Po = 6.2W, RL = 8Ω); **Thermal:** > 85°C heat sink temperature; **PC Limiter:** RL < 1.0Ω

## Cooling Fan Speed Control Circuit

**High-speed** at ≥ 60°C heat sink temp.; Low-speed at < 45°C heat sink temp.

## Controls

**Front:** Seesaw-type POWER switch; 31-digit A-curve attenuators × 2 (only CH A functions during BTL-MONO operation)  
**Rear:** STEREO/MONO mode switch

## Power Requirements

US & Canadian models: 120 VAC, 50/60Hz  
 General model: 220/240 VAC, 50/60Hz

## Power Consumption

US & Canadian models: 1,500W, 1,800VA  
 General model: 2,500W

## Dimensions (W × H × D)

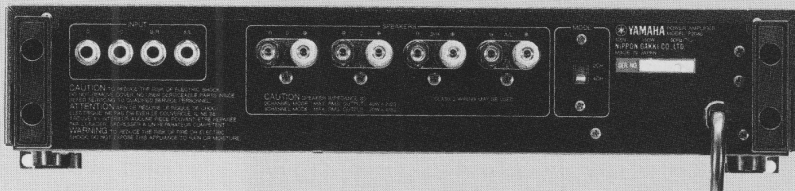
480mm × 97mm × 480mm (18-7/8" × 3-7/8" × 18-7/8")

## Weight 12kg (26.5 lbs.)



# P2040

## 4-CHANNEL/2-CHANNEL POWER AMPLIFIER



P2040

- **High-performance amplifier with both 2-channel and 4-channel operation.**
- **Ideal for a wide range of applications, from announcement systems to background music systems in restaurants, bars, and stores.**

### FEATURES

- Stereo operation of 40 watts RMS per channel and 4-channel operation of 20 watts RMS per channel into 8-ohm loads.
- Independent level controls on all four channels for precise, easy level matching and balancing.
- Independent clip-indicator LEDs to warn of excessively high signal levels, as well as a separate LED to indicate stereo or four-channel operation.
- Can be used in conjunction with surround-type ambience systems such as the Yamaha DSP-1 Digital Signal Processor.

- Complete protection circuitry to guard against both amplifier and speaker damage including a muting circuit, a DC protection circuit, and an over-current protection circuit which automatically shuts down the amplifier if the speaker terminals or cables are accidentally shorted.
- Pure, precise sound reproduction and extended reliability in a compact, economical package.

### GENERAL SPECIFICATIONS

#### Power Output Level

2-Channel: 40W x 2,  $R_L = 8\Omega$ ,  $f = 20\text{Hz} \sim 20\text{kHz}$ ,  $\text{THD} \leq 0.05\%$   
 4-Channel: 20W x 4,  $R_L = 8\Omega$ ,  $f = 20\text{Hz} \sim 20\text{kHz}$ ,  $\text{THD} \leq 0.07\%$

#### Frequency Response

$\pm 0.5\text{dB}$ ,  $f = 20\text{Hz} \sim 20\text{kHz}$ ,  $R_L = 8\Omega$ ,  $P_o = 1\text{W}$

#### Power Bandwidth ( $\leq 0.18\%$ THD)

2-Channel: 10Hz  $\sim$  50kHz,  $P_o = 20\text{W}$ ,  $R_L = 8\Omega$   
 4-Channel: 10Hz  $\sim$  40kHz,  $P_o = 10\text{W}$ ,  $R_L = 8\Omega$

#### THD

2-Channel:  $\leq 0.08\%$ ,  $P_o = 20\text{W}$ ,  $f = 20\text{Hz} \sim 20\text{kHz}$ ,  $R_L = 8\Omega$   
 4-Channel:  $\leq 0.1\%$ ,  $P_o = 10\text{W}$ ,  $f = 20\text{Hz} \sim 20\text{kHz}$ ,  $R_L = 8\Omega$

#### Intermodulation Distortion (70Hz: 7kHz = 4:1)

2-Channel:  $\leq 0.08\%$ ,  $P_o = 20\text{W}$ ,  $R_L = 8\Omega$   
 4-Channel:  $\leq 0.1\%$ ,  $P_o = 10\text{W}$ ,  $R_L = 8\Omega$

#### Channel Separation

2-Channel:  $\geq 70\text{dB}$ ,  $f = 1\text{kHz}$   
 4-Channel:  $\geq 60\text{dB}$ ,  $f = 1\text{kHz}$

#### Damping Factor $\geq 70$ , $f = 1\text{kHz}$ , $R_L = 8\Omega$

#### Signal-to-Noise Ratio

2-Channel:  $\geq 117\text{dB}$ , INPUT short, IHF-A  
 4-Channel:  $\geq 114\text{dB}$ , INPUT short, IHF-A

#### Residual Noise

$\leq -86\text{dBm}$ , ATT min., at  $f_c = 12.7\text{kHz}$  6dB/oct. LPF  
 $\leq -90\text{dBm}$ , ATT min., at IHF-A Network

**Slew Rate** 10V/ $\mu\text{S}$ ,  $R_L = 8\Omega$ , full swing

#### Sensitivity

2-Channel:  $+2.2\text{dBm}$  (1.0V),  $P_o = 40\text{W}$ ,  $R_L = 8\Omega$ ,  $f = 1\text{kHz}$   
 4-Channel:  $-0.8\text{dBm}$  (0.7V),  $P_o = 20\text{W}$ ,  $R_L = 8\Omega$ ,  $f = 1\text{kHz}$

**Voltage Gain** 25dB, ATT. max.,  $f = 1\text{kHz}$

**Input Impedance**  $\geq 20\text{k}\Omega$

#### Indicators

**Clip:** Red LED **Pilot:** Red LED, power ON  
**4ch Mode:** Green LED, Lights when the 4-channel mode is active.

#### Protection Circuits

**Muting:** 4  $\pm$  3 sec. after power turned ON  
**DC Sense:** DC  $\pm$  3V output voltage  
**Over-current:** ON when speaker short at 1kHz, 10W

#### Controls

**Front:** Push-ON/Push-OFF POWER switch, Attenuators x 4  
 (only CH A and B function during 2ch operation)  
**Rear:** 2ch/4ch mode switch

#### Power Requirements

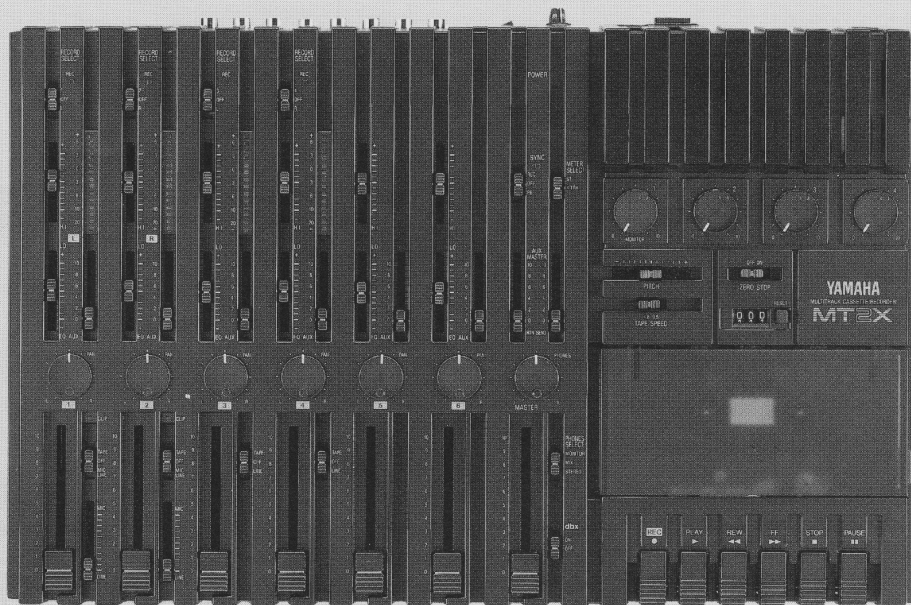
General model: 220/240 VAC, 50/60 Hz  
 Canadian model: 120 VAC, 60 Hz

**Power Consumption** 150 W

**Dimensions (W x H x D)** 480mm x 90mm x 337mm (18-7/8" x 3-1/2" x 13-1/4")

**Weight** 6.5kg (14.3 lbs)



**MT2X****MULTITRACK CASSETTE RECORDER**

MT2X

- **A sophisticated and portable 6-channel mixer/4-track recording and mixdown system.**
- **MIDI synchronization for use with rhythm programmers, sequencers, and MIDI computers.**
- **Specifically designed for the needs of serious amateur and professional musicians.**

**FEATURES**

- Simultaneous 4-track recording with up to 6 input channels, complete with separate monitor section level and pan controls for added flexibility.
- 2-speed recorder operation for optimum flexibility and sound quality.
- Dramatically reduced tape hiss and expanded dynamic range with the dbx\* noise reduction system.
- A handy punch-in/-out jack allows you to engage the Record function without leaving your musical instrument, using the optional FS1 footswitch.
- Zero Stop function for easy auto location of recorded segments.
- Tape Sync function for synchronization with a MIDI sequencer or rhythm programmer. Optional YMC2 MIDI Converter provides additional ease of connection and interfacing.
- Auxiliary send/return circuit permits addition of special effects such as reverb, delay, or flanging to recordings.
- High- and low-band equalization and auxiliary send controls on all input channels.
- "Ping-pong" overdubbing capability permits recording of up to ten tracks without excessive loss of sound quality.
- Bright LED input level meters for each track permit instant visual monitoring of recording levels.
- Three-position Phones selector (monitor, mix, or stereo) for enhanced flexibility in keeping track of your music at any stage of recording.

**GENERAL SPECIFICATIONS**

<b>Transport</b>	
Tape Type	Chrome (70 microsec. EO)
Heads	4-channel Permalloy rec/play 4-channel ferrite erase
Tape Speed	4.8 cm/sec., 9.5 cm/sec.
Pitch Control	±10%
Wow & Flutter	Less than 0.05% WRMS
Fast Wind	Approx. 100 sec. for C-60 tape
Motor	DC servo
<b>Connectors</b>	
Inputs 1, 2:	Input impedance 10kΩ
	Rated input level -10 to -50dB (fader nominal)
	Max. input level +10dB (trim minimum)
	Min. input level -56dB (trim, fader maximum)
Inputs 3-6:	Input impedance 10kΩ
	Rated input level -10dB (fader nominal)
	Min. input level -16dB (fader maximum)
Aux Return L, R:	Input impedance 10kΩ
	Rated input level -10dB (fader nominal)
	Min. input level -16dB (fader maximum)
Stereo L, R:	Output impedance 1kΩ
	Load impedance Greater than 10kΩ
	Rated output level -10dB into 50kΩ
Phones Out:	Load impedance 8-40Ω
	Max. output level 100mW + 100mW
Tape Out 1-4:	Output impedance 1kΩ
	Load impedance Greater than 10kΩ
	Rated output level -10dB into 50kΩ
Aux Send:	Output impedance 1kΩ
	Load impedance Greater than 10kΩ
	Rated output level -10dB into 50kΩ
<b>Electrical Specifications</b>	
Equalizer	HIGH: ±10dB at 10 kHz (shelving) LOW: ±10dB at 100 Hz (shelving) 20Hz ~ 18kHz, ±3dB at 9.5 cm/sec. 40Hz ~ 12.5kHz, ±3dB at 4.8 cm/sec.
Frequency Response	85dB, dbx ON, IHF-A
S/N Ratio	Less than 1% EIAJ 315Hz
Distortion	Greater than 55dB at 1kHz
Channel Separation	Greater than 70dB at 1kHz
Erase Ratio	dbx*
Noise Reduction	
<b>Others</b>	
Power Requirements	US & Canadian models: 120V, 50/60Hz General model: 110/120/220/240V, 50Hz
Dimensions (W×H×D)	413mm×75mm×260mm (16-1/4"×3"×10-1/4")
Weight	3.4kg (7.5 lbs.)

\* dbx is a trademark of dbx Incorporated.

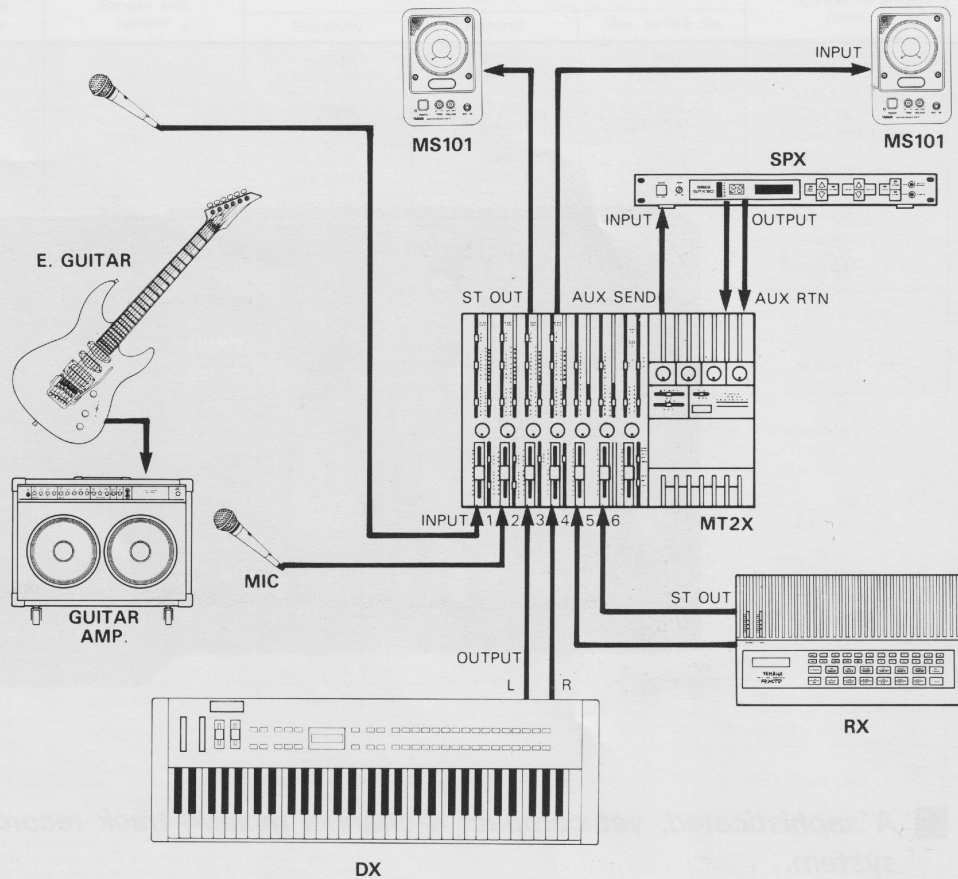
\*YMC10/YMC2 MIDI Converters, LCMT2X Carrying Cases, FC-5/FS2 Foot Switches are optionally available.



## BASIC MT2X SYSTEM WITH EFFECTS

MT2X+SPX+monitor system+mic  
+guitar+DX+RX

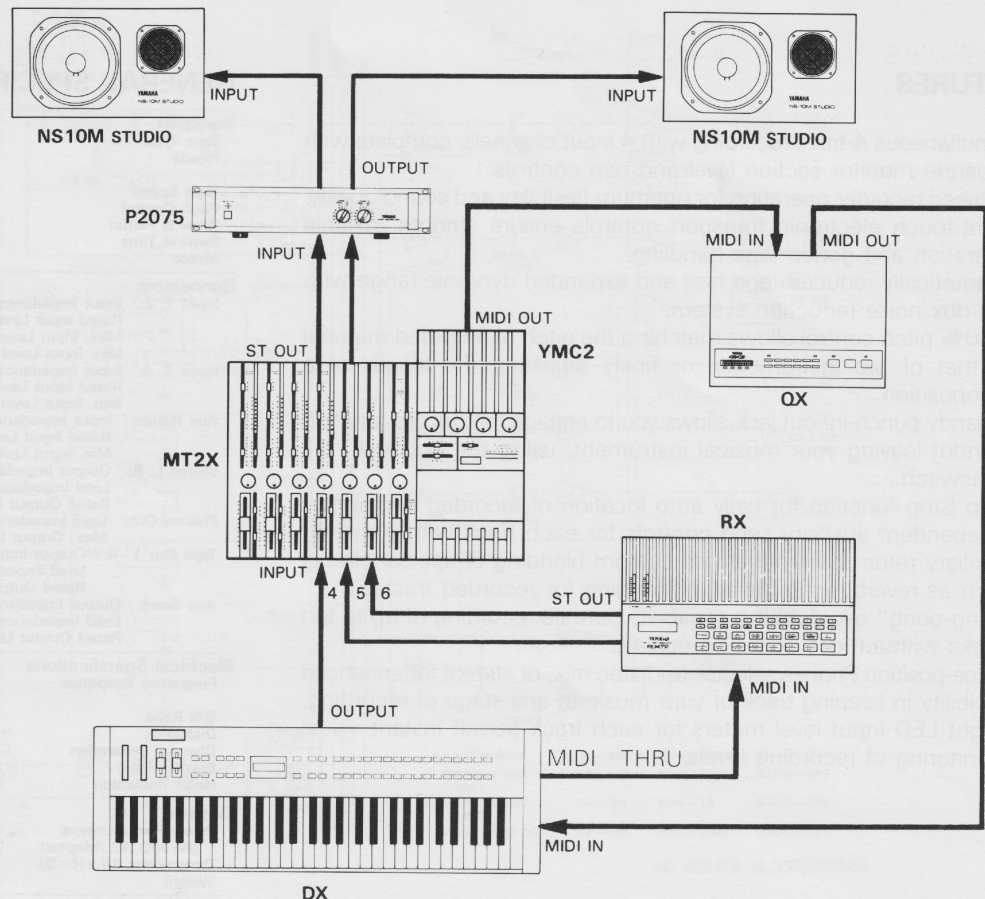
This basic recording system put the MT2X's six input channels to good use. A microphone for vocals and an electric guitar are plugged into channels 1 and 2, taking advantage of the low-level input and level-matching capability provided by these channels. Channels 3 and 4 receive the stereo outputs from a Yamaha DX Digital Programmable Algorithm Synthesizer, and the stereo outputs from a Yamaha RX Digital Rhythm Programmer are plugged into channels 5 and 6. With a setup like this you're ready to record any source on virtually any track with no need for repatching. For top-quality reverb, delay and other effects, a Yamaha SPX Multi-effect Processor is connected into the MT2X's AUX SEND/RETURN loop. A simple but highly effective monitor system is provided by a pair of Yamaha MS101 Powered Monitor Speakers.

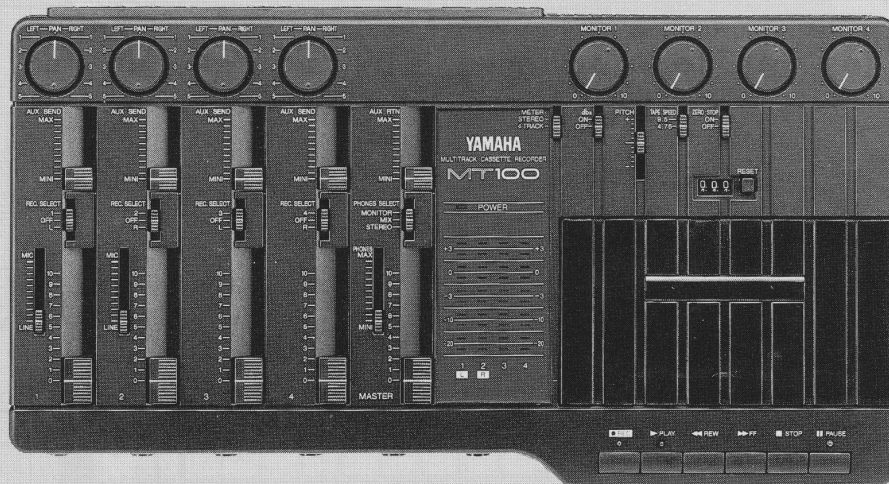


## MIDI TAPE SYNC SYSTEM

MT2X+YMC2+QX+RX+DX  
+monitor system

In this system the YMC2 MIDI Converter converts the MIDI timing signals from the QX Digital Sequence Recorder into analog signals which are recorded on track 4 of the tape. On playback, the analog tape signals are converted back into MIDI form by the YMC2 and used to control START and STOP of the QX. Thus, playback of the QX sequencer, which controls the DX Digital Programmable Algorithm Synthesizer and the RX Digital Rhythm Programmer, is perfectly synchronized to playback of the MT2X tape. Other material can now be recorded on tracks 1 through 3 of the MT2X—vocals, acoustic instruments. The benefit is that playback tracks, and that the synchronized MIDI instruments can be modified as desired: i.e. voices can be changed on the synthesizer or the QX sequence edited without affecting any other tracks.



**MT100****MULTITRACK CASSETTE RECORDER**

MT100

- *A sophisticated, yet compact 4-channel mixer/4-track recording and mixdown system.*
- *Versatility and recording flexibility combined with ease-of-use allow quick translation of musical ideas to polished recordings.*

**FEATURES**

- Simultaneous 4-track recording with 4 input channels, complete with separate monitor section level and pan controls.
- 2-speed recorder operation for optimum flexibility and sound quality.
- Light-touch electronic transport controls ensure smooth, reliable operation and gentle tape handling.
- Dramatically reduced tape hiss and expanded dynamic range with the dbx noise reduction system.
- $\pm 10\%$  pitch control allows matching the pitch of recorded material to that of live instruments, or finely adjusting the length of a composition.
- A handy punch-in/-out jack allows you to engage the Record function without leaving your musical instrument, using the optional FS-1 footswitch.
- Zero Stop function for easy auto location of recorded segments.
- Independent auxiliary send controls for each track with a master auxiliary return control permits custom blending of special effects such as reverb, echo, delay, or flanging for recorded tracks.
- "Ping-pong" overdubbing capability permits recording of up to ten tracks without loss of sound quality.
- Three-position Phones selector (monitor, mix, or stereo) for enhanced flexibility in keeping track of your music at any stage of recording.
- Bright LED input level meters for each track permit instant visual monitoring of recording levels.

**GENERAL SPECIFICATIONS**

<b>Transport</b>	
Tape Type	Chrome (70 microsec. EQ)
Heads	4-channel Permalloy rec/play head, 4-channel ferrite erase head
Tape Speed	4.75 cm/sec., 9.5 cm/sec.
Pitch Control	$\pm 10\%$
Wow & Flutter	Less than 0.05% WRMS
Rewind Time	Approx. 100 sec., for C-60 tape
Motor	DC servo motors (2)
<b>Connectors</b>	
Input 1, 2:	Input Impedance 10k $\Omega$
	Rated Input Level -10 dB to -50 dB (fader nominal)
	Max. Input Level +10 dB (trim min.)
	Min. Input Level -56 dB (trim, fader max.)
Input 3, 4:	Input Impedance 10k $\Omega$
	Rated Input Level -10 dB (fader nominal)
	Min. Input Level -16 dB (fader max.)
Aux Return:	Input Impedance 10k $\Omega$
	Rated Input Level -10 dB (fader nominal)
	Min. Input Level -16 dB (fader max.)
Stereo L, R:	Output Impedance 1k $\Omega$
	Load Impedance Greater than 10k $\Omega$
	Rated Output Level -10 dB into 50k $\Omega$
Phones Out:	Load Impedance 8 $\Omega$ ~ 40 $\Omega$
	Max. Output Level 100 mW + 100 mW/40 $\Omega$
Tape Out 1-4:	Output Impedance 1k $\Omega$
	Load Impedance Greater than 10k $\Omega$
	Rated Output Level -10 dB into 50 k $\Omega$
Aux Send:	Output Impedance 1k $\Omega$
	Load Impedance Greater than 10k $\Omega$
	Rated Output Level -10 dB into 50 k $\Omega$
<b>Electrical Specifications</b>	
Frequency Response	40 Hz ~ 18 kHz, $\pm 3$ dB at 9.5 cm/sec.
	40 Hz ~ 12.5 kHz, $\pm 3$ dB at 4.75 cm/sec.
S/N Ratio	85 dB, dbx ON, IHF-A
Distortion	Less than 1%, 315 Hz
Channel Separation	Greater than 55 dB at 1 kHz
Erase Ratio	Greater than 70 dB at 1 kHz
Noise Reduction	dbx*
<b>General</b>	
Power Requirements	U.S. & Canadian models: 120 V AC, 60 Hz
(PA-100 AC Adaptor)	General model: 220/240 V AC, 50/60 Hz
Dimensions (W x H x D)	382 x 65 x 205 mm (15" x 2-1/2" x 8")
Weight	2.5 kg (5.5 lbs)

\* dbx is a trademark of dbx Incorporated.

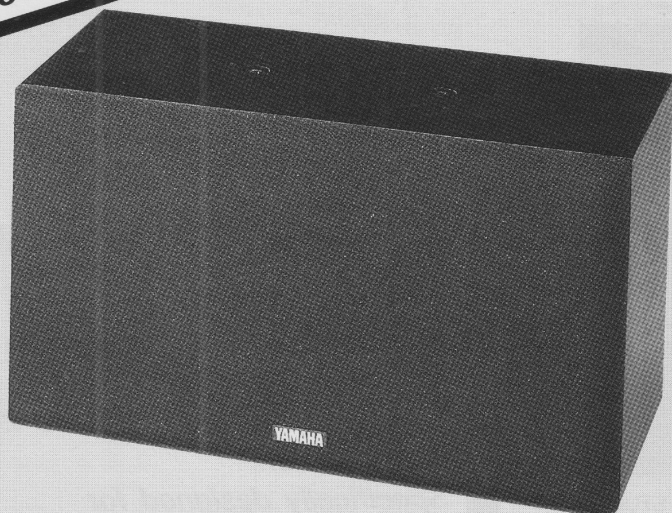
\* FS1 Foot Switch is optionally available.



# NS10MC

## COMMERCIAL SPEAKER SYSTEM

**New Product**



NS10MC

- **Optimum sound and efficiency for commercial sound installations.**
- **Compact, high-performance 2-way configuration.**
- **Power input capacity sufficient for handling the higher power levels required for covering relatively large areas.**

### FEATURES

- Full-range, flat response from 60 Hz to 20 kHz.
- Power capacity of 60 watts (program) and maximum of 120 watts for smooth handling of high power levels.
- Overall response designed for clean, well-defined sound and uniform sound distribution.
- Unique sheet-formed white-cone 18 cm woofer and a 3.5 cm dome tweeter, with special acoustic filter, for optimum high-end response, outstanding clarity and broad dispersion.
- Optimum woofer/tweeter matching and careful crossover design ensure smooth natural transition between frequency ranges with minimum phase variation.
- Superior transient response delivers crisp, transparent sound.
- Optionally available hardware for a variety of installation possibilities; ceiling and wall mounting brackets or a speaker stand allow you to match the mounting hardware to your particular installation requirements.

### GENERAL SPECIFICATIONS

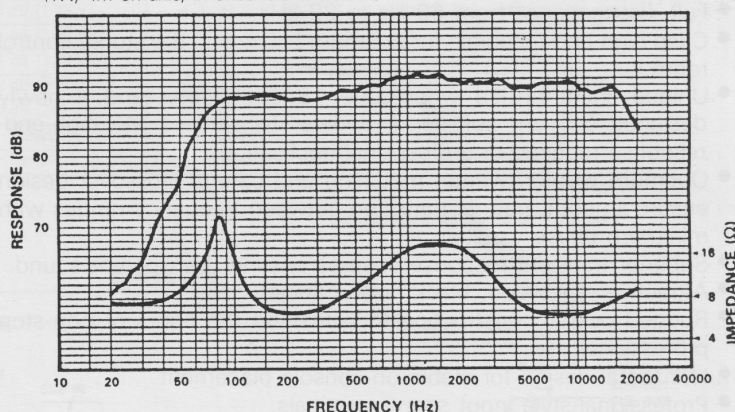
<b>Frequency Range</b>	60 Hz – 20 kHz
<b>Power Capacity</b>	60 W (PROGRAM) 120 W (MAX.)
<b>Nominal Impedance</b>	8Ω
<b>Sensitivity</b>	90 dB SPL (1W, 1m, on axis)
<b>Components</b>	L.F.: 18 cm (7") cone woofer (JA1801) H.F.: 3.5 cm (1-3/8") soft-dome tweeter (JA0518A)
<b>Enclosure</b>	10.4-liter acoustic suspension, real wood, black finish, removable grille
<b>Dimensions (W × H × D)</b>	381.5 × 215 × 200.5 mm (15" × 8-1/2" × 7-7/8")
<b>Weight</b>	Approx. 6.5 kg (14.3 lbs.)

BWS50-190/-260/-320 Ceiling/Wall Brackets and STS-50 Speaker Stand are optionally available.

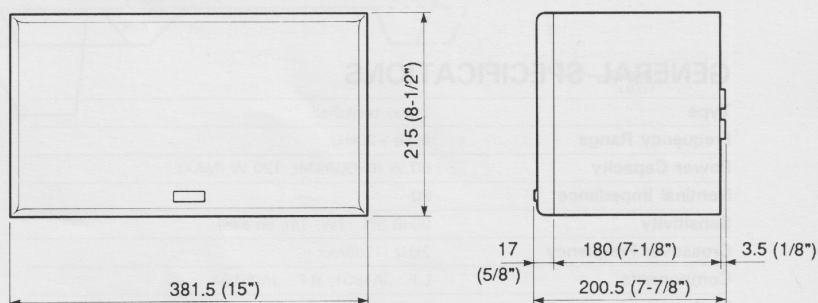
### TECHNICAL DATA

#### ■ Frequency Response/Impedance

(1W, 1m on axis, in anechoic chamber.)



### DIMENSIONS



Unit: mm (Inch)



# NS10M STUDIO

## PROFESSIONAL NEAR-FIELD STUDIO MONITOR



NS10M STUDIO

- *Exceptionally tight and clean reproduction in an on-console studio speaker.*
- *Compact, high-performance 2-way configuration.*
- *Specifically designed for professional near-field monitor applications.*

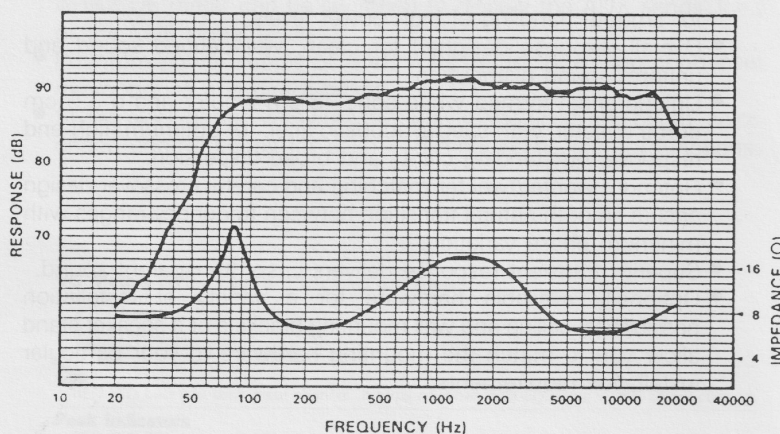
### FEATURES

- Full, flat response from 60 Hz to 20 kHz.
- Crisp high-end response for optimum balance in the studio control room.
- Unique sheet-formed white-cone 18 cm woofer and a newly designed 3.5 cm soft-dome tweeter to achieve the high-end response required in professional applications.
- Optimum woofer/tweeter matching and careful crossover design ensure smooth, natural transition between frequency ranges with minimum phase variation.
- Superior transient response ensures pristine, transparent sound.
- Attractive real wood, black finish cabinet.
- Rugged overall construction to withstand the rigors of non-stop professional use.
- Horizontal design for stable on-console placement.
- Professional-style input screw terminals.

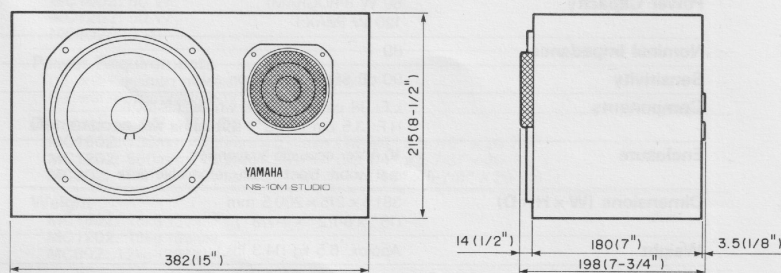
### TECHNICAL DATA

#### Frequency Response/Impedance

(1W, 1m on axis, in anechoic chamber.)



### DIMENSIONS



Units : mm (Inch)

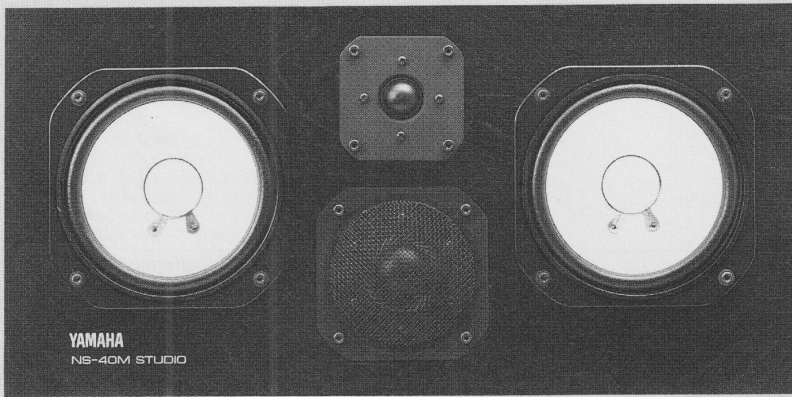
### GENERAL SPECIFICATIONS

Type	2-way bookshelf
Frequency Range	60Hz ~ 20kHz
Power Capacity	60 W (PROGRAM); 120 W (MAX)
Nominal Impedance	8Ω
Sensitivity	90dB SPL (1W, 1m, on axis)
Crossover Frequency	2kHz (12dB/oct.)
Components	L.F.: JA1801; H.F.: JA0518A
Enclosure	Real wood, black finish
Dimensions (W×H×D)	382mm×215mm×198mm (15"×8-1/2"×7-7/8")
Weight	6.3kg (13.9 lbs)



# NS40M STUDIO

## PROFESSIONAL STUDIO MONITOR



NS40M STUDIO

- *Exceptionally flat, precise sound in a midsized studio monitor.*
- *Compact, high-performance dual-woofer, 3-way acoustic suspension system.*
- *Ideal as a main monitor for small recording studios, as well as a secondary monitor system in larger studios.*

### FEATURES

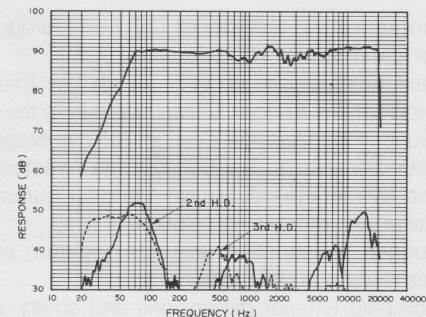
- Full, flat response from 50 Hz to 20 kHz.
- Program input capacity of 100 watts RMS for consistent handling of control-room monitoring levels.
- Dual-woofer configuration delivers greater, optimally balanced power in the bass region, while the specially designed low-resonance-frequency woofers provide accurate, extended bass response.
- Precise woofer/midrange/tweeter matching and careful crossover design ensure smooth, natural transition between frequency ranges and permits each speaker to operate at its flattest, most precise range.
- Separately mounted independent filters for each speaker prevent interference caused by flux leakage and minimize vibration-induced modulation.
- Attractive real wood, black finish cabinet with heavy-duty construction to withstand the rigors of professional use.
- Large, rugged input screw terminals.

### GENERAL SPECIFICATIONS

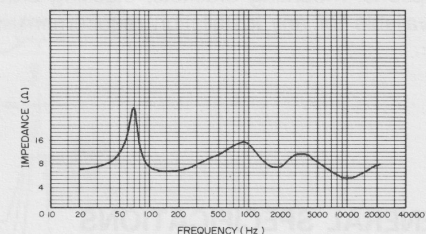
Type	3-way acoustic-suspension bookshelf
Frequency Range	50Hz-20kHz
Power Capacity	100 W (PROGRAM), 200 W (MAX.)
Nominal Impedance	6Ω
Sensitivity	90dB SPL (1W, 1m, on axis)
Crossover Frequency	1.3 kHz (12 dB/oct.) 5.5 kHz (MID: 12 dB/oct., TW: 18 dB/oct.)
Components	18 cm cone woofer x 2 (JA1811) 6 cm soft-dome midrange (JA0610) 3 cm soft-dome tweeter (JA0589)
Enclosure	Real wood, black finish
Dimensions (W x H x D)	598mm x 293mm x 312mm (23-1/2" x 11-1/2" x 12-1/4")
Weight	17kg (37.5 lbs)

### TECHNICAL DATA

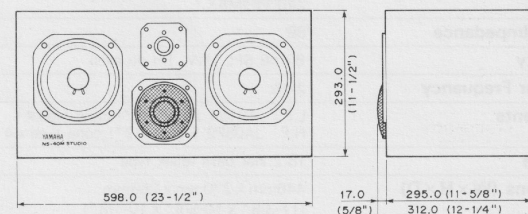
- **Frequency Response/Harmonic Distortion**  
(1W, 1m on axis, in anechoic chamber.)



- **Impedance vs Frequency**



### DIMENSIONS

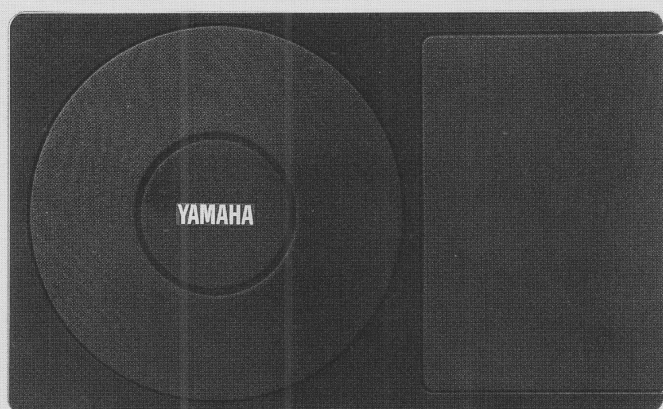


Units : mm (Inch)



# S50X

## COMPACT PA/MONITOR SPEAKER SYSTEM



S50X



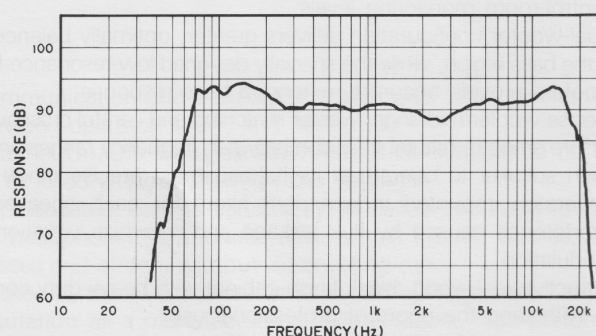
- *Compact high-quality speaker system ideal for a wide range of applications.*
- *Clear, pristine sound reproduction with high power handling capability.*

### FEATURES

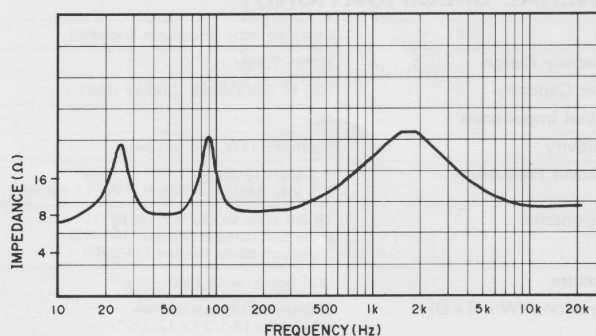
- Program input capacity of 120 watts (program) and 240 watts (max.) for clear sound reproduction.
- Bass reflex enclosure with 8-inch low frequency cone woofer.
- Excellent low frequency response due to the specially constructed SFCC (Super Fine Ceramic Composite) diaphragm.
- Four 2-inch high frequency cone tweeters—two mounted in front and two on the side — provide clear, natural sound with any speaker placement or listening position.
- Rugged construction ensures long-term reliability in even the most demanding applications.
- Compact exterior dimensions and smart, stylish appearance.
- Optional mounting brackets, stacking brackets, and speaker stands available for any installation requirement.

### TECHNICAL DATA

- **Power level VS frequency**  
(1W, 1m on axis, in reverberant chamber.)



- **Impedance vs Frequency**



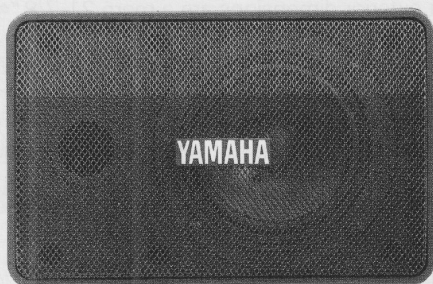
### GENERAL SPECIFICATIONS

Frequency Range	45Hz ~ 20kHz
Power Capacity	60 W (NOISE) 120 W (PROGRAM) 240 W (MAX.)
Nominal Impedance	8Ω
Sensitivity	87 dB SPL (1W, 1m on axis)
Crossover Frequency	2kHz
Components	L.F.: JA2124 20 cm (8") cone type × 1 H.F.: JA05P2 5.5 cm (2") cone type × 4
Enclosure	18.2 liter bass reflex type
Dimensions (W × H × D)	440mm × 270mm × 256mm (17-3/8" × 10-5/8" × 10-1/8")
Weight	8.9kg (19.6 lbs)



# S10X/20X

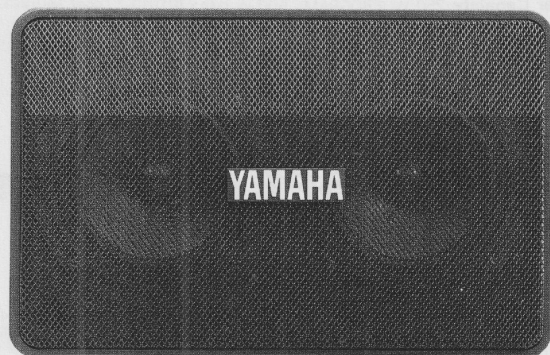
## COMPACT PA/MONITOR SPEAKER SYSTEMS



S10X

### ■ A compact system ideal for a wide range of applications.

\*BWS-10/BCS-10 Mounting Brackets, BAS-10 Free Angle Clamp and BMS-10/S Mic Stand Adaptors are optionally available.

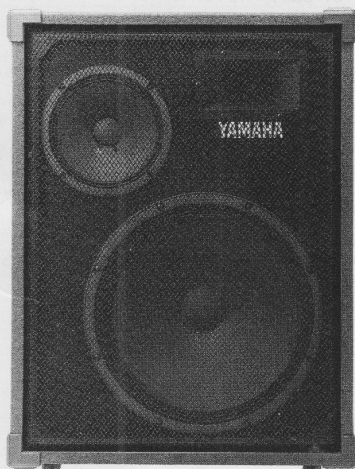


S20X

### ■ Light, compact high-quality monitor or PA speaker.

\*BWS-10 Mounting Bracket, BAS-10 Free Angle Clamp and BMS-10/S Mic Stand Adaptors are optionally available.

# S300



S300

### FEATURES

- Newly developed 15" cone woofer for deep, accurate bass reproduction.
- 8" cone midrange unit delivers smooth, natural response.
- Precision horn tweeter design ensures broad, even dispersion.
- Exceptionally rugged and durable for maximum roadability.
- Recessed handles, elegant corner protectors and black finish and grille.

### ■ S10X

- Program input capacity of 75 watts RMS and maximum handling capacity of 150 watts for warm, rich sound.
- Newly designed 4" driver unit features a specially formulated carbon fiber cone.
- Optimum versatility with both standard 1/4" phone jack and push-button-type speaker cable input connectors.
- Bass reflex enclosure is constructed of state-of-the-art materials.
- Tiny exterior dimensions.

### GENERAL SPECIFICATIONS

#### Speaker Unit

JA1001 x 1 (10cm carbon-fiber cone, magnetic shield) (4")

#### Enclosure

Bass reflex

#### Power

75W (program)

#### Capacity

150W (max.)

#### Sensitivity

87dB S.P.L. (1W, 1m)

#### Frequency Range

65Hz to 20kHz

#### Nominal Impedance

6Ω

#### Dimensions (W x H x D)

240mm x 155mm x 164mm (9-1/2" x 6-1/8" x 6-1/2")

#### Weight

2.8kg (6.2 lbs)

### ■ S20X

- Program input capacity of 150 watts RMS and maximum handling capacity of 300 watts for full, rich sound.
- A pair of highly efficient 4" full range drivers featuring a durable carbon fiber cone for precise response.
- Enclosure is bass reflex design constructed of advanced materials.
- Tiny exterior dimensions: 11-5/8" x 7-1/2" x 7-3/4".
- Both standard 1/4" phone jack and push button type speaker cable input connectors give maximum versatility.

### GENERAL SPECIFICATIONS

#### Speaker Unit

JA1002 x 2 (10cm carbon-fiber cone) (4")

#### Enclosure

Bass reflex

#### Power

150W (program)

#### Capacity

300W (max.)

#### Sensitivity

90dB S.P.L. (1W, 1m)

#### Frequency Range

65Hz to 20kHz

#### Nominal Impedance

6Ω

#### Dimensions (W x H x D)

296mm x 191mm x 197mm (11-5/8" x 7-1/2" x 7-3/4")

#### Weight

4.6kg (10.1 lbs)

## 3-WAY SPEAKER SYSTEM

- An ideal speaker choice for sound reinforcement and musical instrument amplification.
- Remarkably compact 3-way system accepts up to 200 watts (continuous program) input power.
- Outstanding response right down to the lowest bass frequencies.

### GENERAL SPECIFICATIONS

#### Components

LF 15" Cone	JA3815
MF 8" Cone	JA2116
LF driver & horn	JA3251

#### Enclosure

Bass reflex, black leatherette

#### Frequency Range

50 Hz ~ 20 kHz

#### Nominal Impedance

8Ω

#### Crossover Frequency

800 Hz, 4 kHz

#### Sensitivity

97 dB/SPL (1W, 1m on axis)

#### Power Capacity

200 W (PROGRAM), 400 W (MAX.)

#### Dispersion

Horizontal 120°, Vertical 90°

#### Connectors

Parallel 1/4" phone jack

(XLR connector can be substituted)

#### Control

HF Level

#### Dimensions (W x H x D)

561.5 x 731.5 x 389 mm

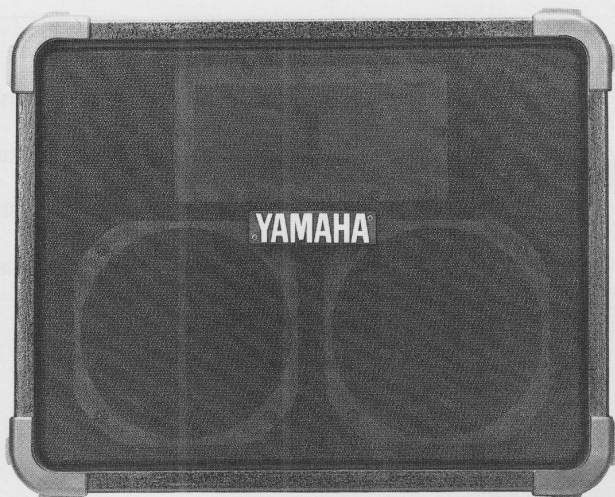
(22-1/8" x 28-3/4" x 15-1/4")

#### Weight

33.2 kg (73.2 lbs)

# S250X

## COMPACT PA SPEAKER SYSTEM

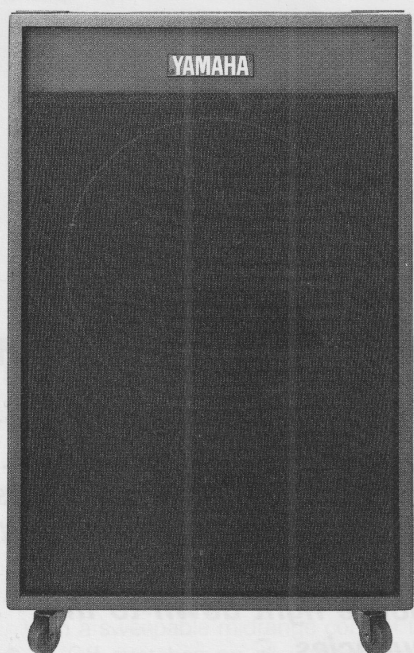


S250X

- **Compact PA speaker system with exceptional coverage.**

# S250B

## SUB WOOFER SPEAKER SYSTEM



S250B

- **Woofer speaker system designed as a tandem unit for the S250X speaker system, or any 3-way PA system.**



S250X/S250B

### FEATURES

- Compact exterior dimensions are a mere 21-7/8" wide x 17-1/2" high x 10" deep.
- 250 watts continuous program input capacity and 97dB/w/m sound pressure level.
- Unique 2-way bass-reflex design incorporates a wide-dispersion horn tweeter and dual bass drivers with durable-but-sensitive carbon fiber cones.
- Compact, elegant computer-optimized bass-reflex enclosure is constructed of douglas fir veneer panels and high-density particle board baffles.
- Broad dispersion characteristics at all frequencies provide complete audience coverage in nearly any situation.
- Standard 1/4" inputs easily replaced with XLR types.
- Completely versatile in mounting, it can be stacked, stand-mounted, suspended, wall mounted or used as a foldback.
- Convenient, recessed carrying handles make transporting easy.

### GENERAL SPECIFICATIONS

**Power Capacity** 250 W (PROGRAM), 500 W (MAX.)  
**Frequency Range** 65 Hz ~ 17 kHz  
**Crossover Frequency** 2.5 kHz  
**Components** LF: 2 x 8" (20 cm) JA2113 (carbon fiber cone)  
 HF: 1 x JA3202 (HF: driver + horn)  
**Nominal Impedance** 8Ω  
**Weight** 19.2 kg (42.3 lbs)

### FEATURES

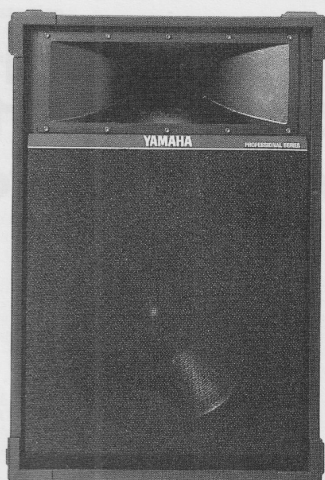
- Program input capacity of 300 watts at 8 ohms and maximum handling capacity of 600 watts for fuller, richer bass.
- 15" woofer delivers extremely flat response with high efficiency all the way down to the lowest extremes of the bass range.
- Efficient bass reflex enclosure with steel mesh grille to protect the speaker.
- Standard 1/4" phone jack inputs are fitted for fast setups and are easily replaced with XLR types.
- Recessed carrying handles make transporting easy and allow the speaker to be placed against a wall.
- Finish is non-distracting black paint.
- Caster wheels for easy movement.

### GENERAL SPECIFICATIONS

**Speaker Unit** JA3806 (15")  
**Nominal Impedance** 8Ω  
**Power Capacity** 150 W (NOISE), 300 W (PROGRAM), 600 W (MAX.)  
**Sensitivity** 97 dB/SPL (1W, 1m)  
**Frequency Range** 40 Hz ~ 2.5 kHz  
**Recommended Crossover Frequency**  
 200 Hz to 800 Hz  
 With the S250X recommended crossover frequency 250 Hz,  
 Recommended level settings: S250B 0dB, S250X 5 dB  
**Enclosure Type** Bass reflex type  
**Enclosure Volume** 135 liter  
**Inputs** 1/4" phone jack x 2 (XLR connector can be substituted)  
**Dimensions (W x H x D)**  
 543mm x 800mm x 445mm (21-3/8" x 31-1/2" x 17-1/2")  
**Weight** 37.5 kg (82.7 lbs)



# S500



■ **High-power, high-performance 3-way professional sound reinforcement speaker.**

## 3-WAY SPEAKER SYSTEM

### FEATURES

- Full 240-watt program input capacity at 8 ohms for superior clarity and efficiency with extraordinarily low distortion.
- 15" ceramic composite woofer with precise response and low distortion, and a high-performance ring super-tweeter.
- A constant directivity high-frequency horn and compression driver configuration for optimum projection and clarity.
- H.F. and V.H.F. level controls for achieving accurate overall tonal balance in any application.

### GENERAL SPECIFICATIONS

**Frequency Range** 38 – 20,000 Hz

**Power Capacity** 120 W (NOISE), 240 W (PROGRAM), 480 W (MAX.)

**Sensitivity** 98 dB S.P.L. (1 W, 1 m, on-axis)

**Components**

LF: JA8818

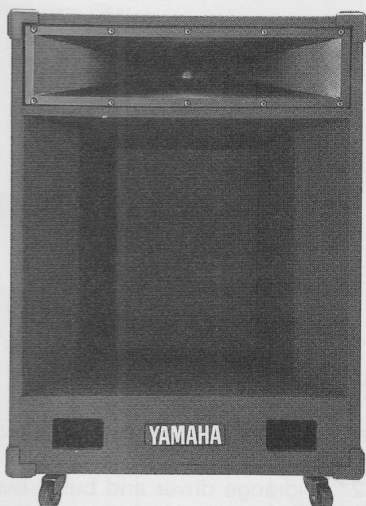
HF: JA4208/HORN

VHF: JA4205B

**Dimensions (W × H × D)** 537 × 797 × 457 mm (21-1/8" × 31-3/8" × 18")

**Weight** 47 kg (103.6 lbs.)

# S4115HII



■ **Professional PA speaker system for any sound reinforcement application.**

## PA SPEAKER SYSTEM

### FEATURES

- Full 240-watt program input capacity at 8 ohms for clean, brilliant sound with suprisingly little distortion.
- 15" carbon-cone woofer with superior attack and dispersion and a high performance H.F. driver and horn combination provide superb sound reproduction and excellent balance.
- Large, front-loaded horn bass-reflex enclosure is constructed of advanced materials for minimum resonance, rich bass response, and extremely high durability.

### GENERAL SPECIFICATIONS

**Frequency Range** 50 – 16,000 Hz

**Power Capacity** 120 W (NOISE), 240 W (PROGRAM), 480 W (MAX.)

**Sensitivity** 103 dB S.P.L. (with 1 W at 1 m on-axis)

**Components**

LF: 15" Low Frequency Loudspeaker JA3813

HF: High Frequency Compression Driver JA4208

**Dimensions (W × H × D)** 632 × 821 × 457 mm (24-7/8" × 32-3/8" × 18")

**Weight** 56.0 kg (123.5 lbs.) (with caster)

# S2115HII



■ **High efficiency 2-way speaker system.**

## STAGE MONITOR SPEAKER SYSTEM

### FEATURES

- Full 240-watt program input capacity at 8 ohms for ample on-stage monitoring in any situation.
- Input sensitivity is 100 dB (SPL achieved at 1 meter with a 1-watt input), for precise matching to a broad range of amplification systems.
- High frequency level control for variable driver output adjustment.

### GENERAL SPECIFICATIONS

**Power Capacity** 120 W (NOISE), 240 W (PROGRAM), 480 W (MAX.)

**Components**

LF: 15" Low Frequency Loudspeaker JA3813

HF: High Frequency Compression Driver JA4208

**Nominal Impedance** 8 Ω

**Dimensions (W × H × D)** 673 × 563 × 668 mm (26-1/2" × 22-3/16" × 26-5/16")

**Weight** 38 kg (83 lbs. 10 oz.)

# CLUB SERIES SPEAKERS

## S315ES/S215ES/ S212ES/SM12ES

### for SOUND REINFORCEMENT/MONITORING

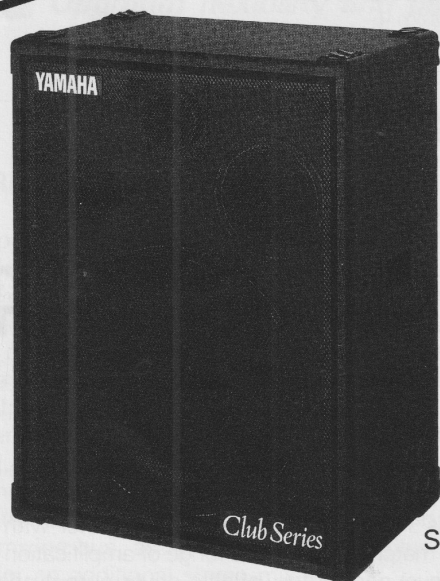
#### The Club Series Range

All the Club Series speakers feature the following:

- A "European" sound, thanks to a close relationship between Yamaha and British manufacturers.
- Custom-designed passive crossover units for smooth, accurate response.
- Continuously variable high-frequency control for precise adjustment of sound quality.
- Parallel jack sockets for linking speakers together.
- Interlocking corners for easier, safer stacking.
- Recessed handles for setting up and taking down.
- Good-looking rugged classic cabinet design.
- Front-mounted drivers for easy access.

## S315ES

New Product



S315ES

#### ■ S315ES FEATURES

- Three-way speaker system for basic PA setups, especially suitable for "near-field" applications.
- 15" woofer, 6-1/2" midrange driver and bullet tweeter.
- Smooth sound and wide frequency response make the S315ES ideal for settings where detail is important.
- Extended bass response from the ported enclosure makes the S315ES suitable for keyboard monitoring, or as a side-fill monitor where "near-field" monitoring is required.

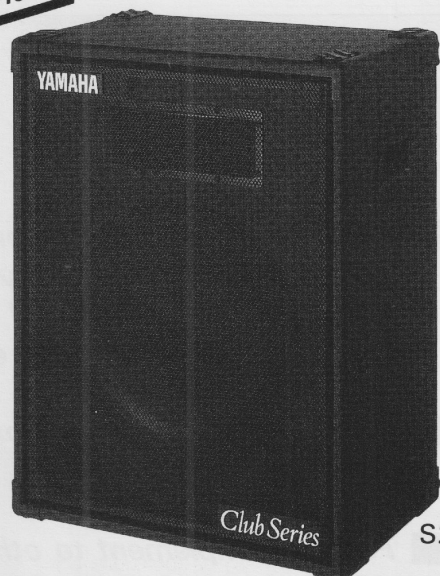
#### GENERAL SPECIFICATIONS

**Frequency Range** 45–20,000 Hz  
**Power Capacity** 100 W (RMS), 200 W (PROGRAM), 400 W (MAX.)  
**Nominal Impedance** 8Ω  
**Crossover Frequency** 1 kHz, 7 kHz  
**Components**  
 LF: 15" cone  
 MF: 6-1/2" cone  
 HF: Bullet tweeter  
**Enclosure** Ported  
**Connectors** 2 × 1/4" jacks (parallel)  
**Control** Continuously variable high-frequency attenuation  
**Dimensions (W × H × D)** 556 × 727 × 368 mm (21.9" × 28.6" × 14.5")  
**Weight** 30 kg (66 lbs)



## S215ES

New Product



S215ES

### ■ S215ES FEATURES

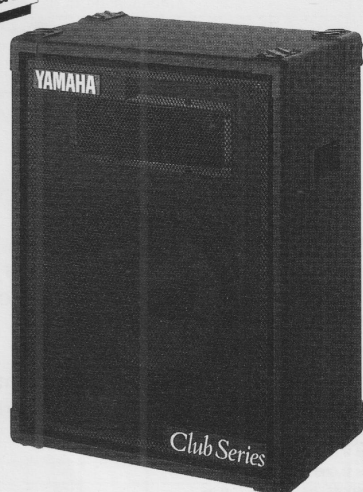
- Two-way speaker system for medium-throw sound reinforcement.
- 15" woofer and horn tweeter.
- Power and "punch" make the S215ES ideal for venues where longer throw is necessary.
- The S215ES can also be used for sidefill monitoring on larger stages and for disco use in sound systems.
- Controlled vertical dispersion helps reduce feedback in acoustically "live" venues.
- Dual-ported enclosure overcomes the problems associated with infinite baffle speaker cabinets.

### GENERAL SPECIFICATIONS

**Frequency Range** 45 – 16,000 Hz  
**Power Capacity** 100 W (RMS), 200 W (PROGRAM), 400 W (MAX.)  
**Nominal Impedance** 8Ω  
**Crossover Frequency** 1.6 kHz  
**Components**  
 LF: 15" cone  
 HF: Horn driver  
**Enclosure** Dual-ported  
**Connectors** 2 x 1/4" jacks (parallel)  
**Control** Continuously variable high-frequency attenuation  
**Dimensions (W x H x D)** 556 x 727 x 368 mm (21.9" x 28.6" x 14.5")  
**Weight** 28 kg (61.6 lbs)

## S212ES

New Product



S212ES

### ■ S212ES FEATURES

- Two-way speaker system in a compact enclosure for medium-throw sound reinforcement.
- 12" woofer and horn tweeter.
- Clear, tight bass response from the woofer, and controlled treble from the horn tweeter.
- Stand-mounted capability for venues where space is limited.
- Ideal for use in smaller venues or as a sidefill/instrument monitor on smaller stages.

### GENERAL SPECIFICATIONS

**Frequency Range** 50 – 16,000 Hz  
**Power Capacity** 100 W (RMS), 200 W (PROGRAM), 400 W (MAX.)  
**Nominal Impedance** 8Ω  
**Crossover Frequency** 1.6 kHz  
**Components**  
 LF: 12" cone  
 HF: Horn driver  
**Enclosure** Dual-ported  
**Connectors** 2 x 1/4" jacks (parallel)  
**Control** Continuously variable high-frequency attenuation  
**Dimensions (W x H x D)** 472 x 629 x 304 mm (18.6" x 24.8" x 12.0")  
**Weight** 19.3 kg (42.2 lbs)

## SM12ES

New Product



SM12ES

### ■ SM12ES FEATURES

- Two-way speaker system in a "wedge" cabinet for front-line monitoring.
- 12" woofer and horn tweeter.
- Horn tweeter controls vertical high-frequency dispersion, helping to eliminate feedback, and gives excellent horizontal dispersion, allowing freedom of movement around the stage.
- Wedge cabinet allows the SM12ES to be mounted at different angles for optimum monitoring capability.

### GENERAL SPECIFICATIONS

**Frequency Range** 50 – 16,000 Hz  
**Power Capacity** 100 W (RMS), 200 W (PROGRAM), 400 W (MAX.)  
**Nominal Impedance** 8Ω  
**Crossover Frequency** 1.6 kHz  
**Components**  
 LF: 12" cone  
 HF: Horn driver  
**Enclosure** Dual-ported wedge monitor  
**Connectors** 2 x 1/4" jacks (parallel)  
**Control** Continuously variable high-frequency attenuation  
**Dimensions (W x H x D)** 494 x 455 x 559 mm (19.4" x 17.9" x 22.0")  
**Weight** 17.5 kg (38.5 lbs)

# MS101/MS202

## POWERED MONITOR SPEAKER SYSTEMS



MS202

- **Multiple input configuration and comprehensive tone and volume controls permit direct and trouble-free connection with any existing recording setup.**
- **Especially designed for home recording use and semi-professional applications.**
- **Perfect complement to other 100-Series recording equipment, such as the MT100 Multitrack Cassette Recorder and the R100 Reverb Processor.**

### FEATURES

- Provides clean, high-quality sound for playback monitoring.
- Built-in amplification makes connection with other amplifiers unnecessary.

#### The MS202 is equipped with:

- Two 10-cm (4") full-range speakers housed in a bass reflex enclosure that provide flat response over the entire frequency range for full, clear sound reproduction.
- A built-in 20-watt amplifier.
- Both line and microphone inputs—three on the front panel and one on the rear—for maximum flexibility with nearly any kind of instrumental, vocal or audio source.
- A separate mic level control that allows fine adjustment of the balance between the mic and line inputs.
- A line output, on the front panel that permits direct connection to another amplification/speaker system or a tape recorder.
- A protection delay circuit for preventing damage to the speakers from occurring when the power is switched on.

#### The MS101 is equipped with:

- One 10-cm (4") full-range speaker housed in a bass reflex enclosure that provides flat response over the entire frequency range for full, clear sound reproduction.
- A built-in 10-watt amplifier.
- Both line and microphone inputs—one on the front panel and two on the rear—for maximum flexibility with nearly any kind of instrumental, vocal or audio source.

#### Both units feature:

- A combination bass boost/treble boost tone control.
- Double-magnet magnetic shielding of the speakers to eliminate accidental erasure of tapes placed close to the speaker.
- Rubber stoppers fixed to the base of the speaker cabinet for secure, non-slip placement on flat surfaces. Optional mounting brackets are also available for placing the speaker cabinet at the best listening position.

### GENERAL SPECIFICATIONS

	MS202	MS101
<b>Components</b>	10-cm (4") Full-range speaker x 2	10-cm (4") Full-range speaker x 2
<b>Inputs</b>	MIC, LINE 1/2 (1/4" phone jack), LINE 3 (RCA pin jack)	MIC, LINE 1 (1/4" phone jack), LINE 2 (RCA pin jack)
<b>Controls</b>	MIC VOLUME, MASTER VOLUME, POWER ON/OFF switch TONE: LO (max.) +12 dB at 100 Hz, HI (max.) +12 dB at 10 kHz	MASTER VOLUME, POWER ON/OFF switch TONE: LO (max.) +12 dB at 100 Hz, HI (max.) +12 dB at 10 kHz
<b>Amplifier</b>		
Output Power	20 W	10 W
Frequency Response	70 Hz ~ 20 kHz	70 Hz ~ 20 kHz
Input Sensitivity/Impedance	MIC: -50 dB/10k $\Omega$ ; LINE 1-3: -20 dB/15k $\Omega$	MIC: -45 dB/10k $\Omega$ ; LINE 1, 2: -20 dB/15k $\Omega$
Output Level/Impedance	LINE OUT (1/4" phone jack): -20 dB/600 $\Omega$ (nominal)	
<b>Power Requirements/Consumption</b>	U.S. & Canadian models: 120 V AC, 60 Hz/45 W General model: 220/240 V AC, 50/60 Hz/45 W	U.S. & Canadian models: 120 V AC, 60 Hz/30 W General model: 220-240 V AC 50/60 Hz/30 W
<b>Dimensions (W x H x D)</b>	292 x 214 x 198 mm (11-1/2" x 8-7/16" x 7-13/16")	147 x 214 x 194 mm (5-13/16" x 8-7/16" x 7-5/8")
<b>Weight</b>	3.9 kg (8 lbs 9 oz)	2.2 kg (4 lbs. 13 oz)

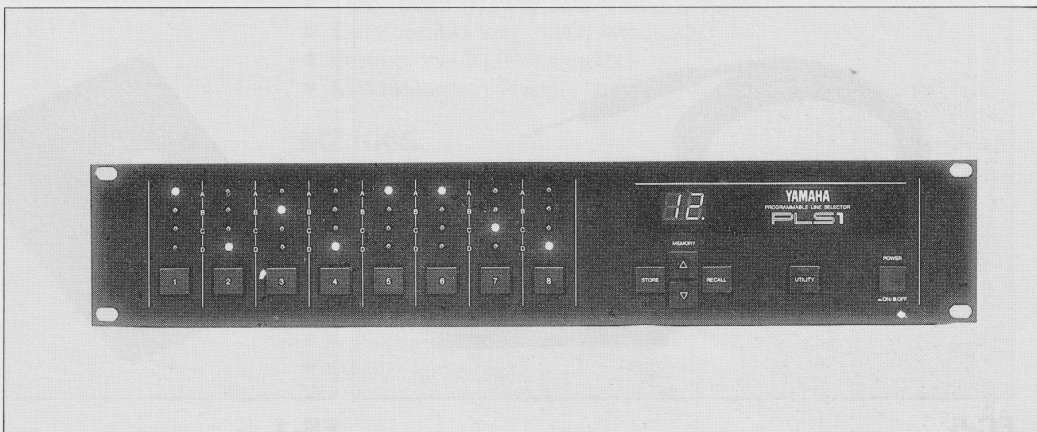
\*STS10/STS2 Speaker Stands are optionally available.



## Programmable Line Selector

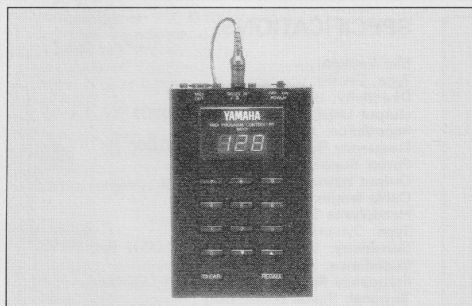
### PLS1

This sophisticated programmable audio patchbay allows convenient and fast signal re-routing for multi-keyboard/instrument setups, recording systems and many other applications. It features 8 independent line-selection channels, each with 4 inputs (A, B, C and D) and a single output. Separate line select keys are provided for each channel, allowing fast routing of any input to the channel output and up to 99 different patch configurations can be stored in memory. MIDI control capability is also provided for remote selection of stored patch configurations, via sequencer, synthesizer or other MIDI devices.



PLS1

## MIDI Program Controller

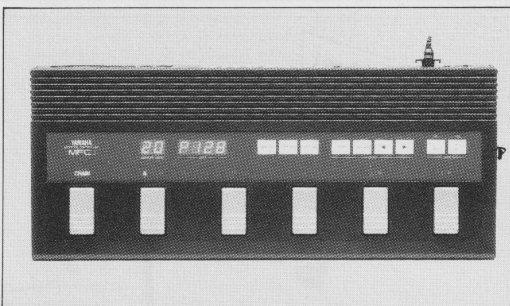


MPC1

### MPC1

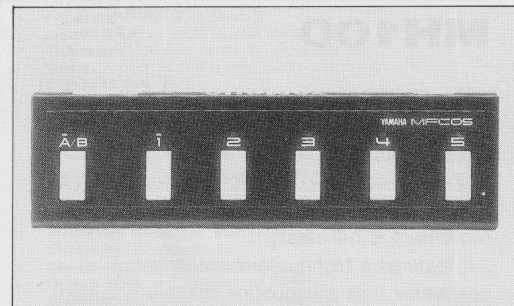
The MPC1 is a compact, easy-to-use MIDI program change controller that can be used for remote control of any MIDI device that receives and uses MIDI program change messages. It could be used, for example, to remotely select programs on digital signal processors in a recording or sound reinforcement system, to select "scenes" on the DMP series Digital Mixing Processors, or to remotely select voices on MIDI instruments. The MIDI transmission channel can also be set for full compatibility with any MIDI device.

## Foot Controllers



MFC-1

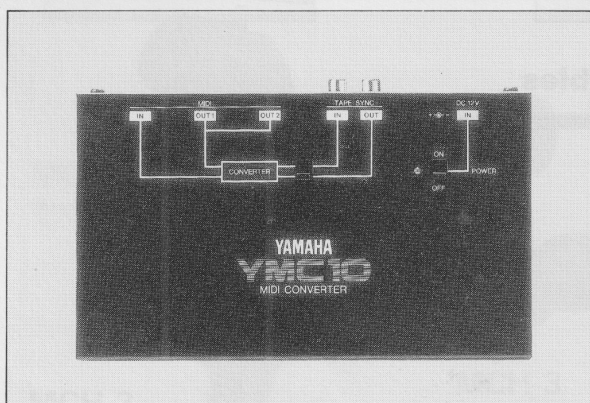
MIDI Foot Controller



MFC-05

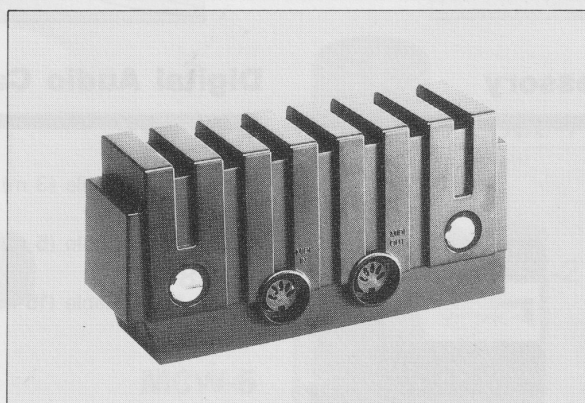
MIDI Foot Controller

## MIDI Converters



YMC-10

MIDI Converter

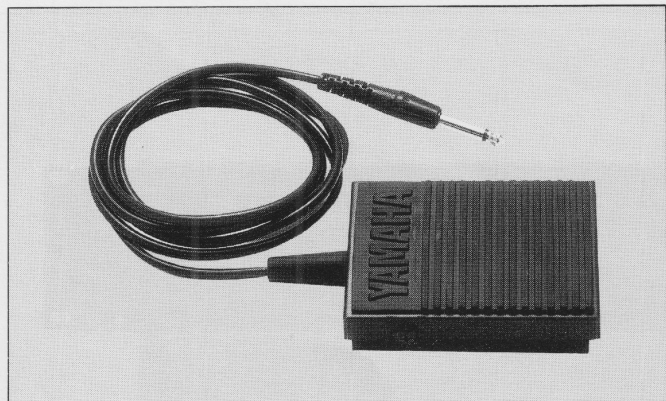


YMC-2

MIDI Converter for MT2X



## Foot Switches

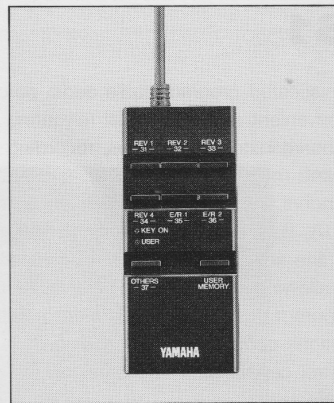


**FC-5**  
Foot Switch for MT2X



**FS-1**  
Foot Switch for MT2X

## Remote Control



**RC-5**  
Remote Controller for REV5

## Headset Microphone

### MH100

The MH100 Headset Microphone offers maximum performance and quality as both a stereo headphone set and a vocal microphone. It is designed particularly for live performance and other situations in which freedom of movement is necessary.

It features a high-performance electret condenser type microphone (battery powered) with unidirectional directivity for optimum pickup characteristics and a minimum of feedback and has flat frequency response over the entire spectrum for suitability with every kind of voice.



MH100

### SPECIFICATIONS

#### Mic Section

**Type:** Electret condenser  
**Directivity:** Unidirectional  
**Output Level:** -70 dB (0 dB=0.0002 Bar, 1 kHz)  
**Impedance:** 1.6k $\Omega$   
**Frequency Response:** 100 Hz - 10,000 Hz  
**Power Supply:** SR44 battery  
**Output terminal:** 1/4" phone plug  
**Cable length:** 2.5 m

#### Headphone Section

**Type:** Dynamic  
**Sensitivity:** 106 dB/mW (0 dB=0.0002 Bar, 1 kHz)  
**Impedance:** 32 $\Omega$   
**Frequency Response:** 100 Hz - 10,000 Hz  
**Terminal:** Stereo phone plug  
**Cable length:** 2.5 m

## Headphones

**RH5M**  
Monitor Headphone



**RH10M**  
Monitor Headphone

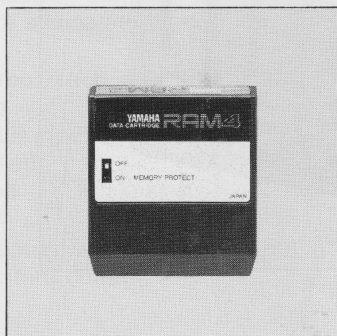


**RH40M**  
Monitor Headphone



## DMP7 / DMP7D Accessory

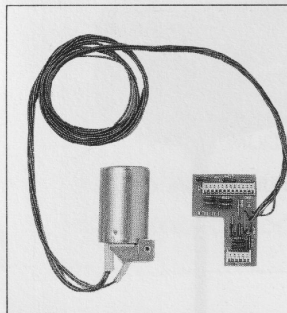
**RAM4**  
Data Cartridge for DMP7/  
DMP7D



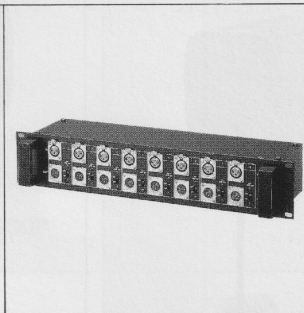
## Digital Audio Cables

**YDC803**  
Digital Audio Cable (3 m)  
**YDC805**  
Digital Audio Cable (5 m)  
**YDC815**  
Digital Audio Cable (15 m)

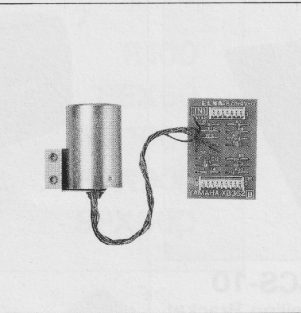


**PM3000/PM1800 Accessories**

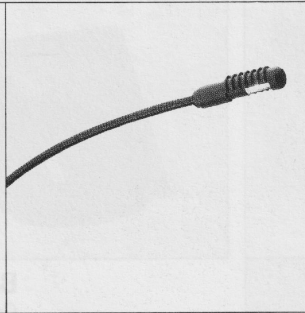
**IT-3000**  
Input Transformer for  
PM3000



**OT-3000**  
Output Transformer for  
PM3000

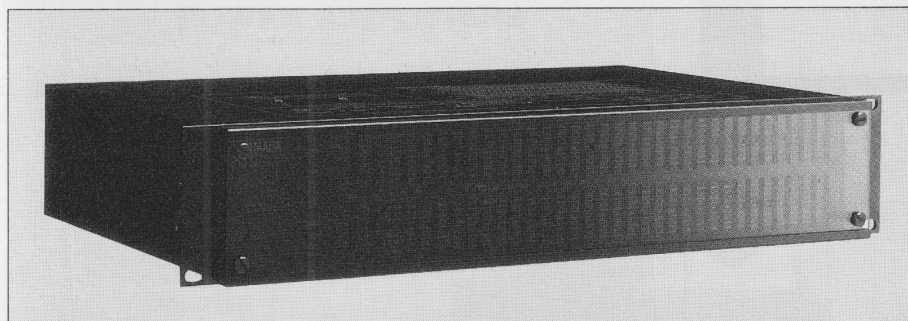


**IT-1800**  
Input Transformer for  
PM1800



**LT-1800**  
Light Gooseneck for  
PM3000/1800

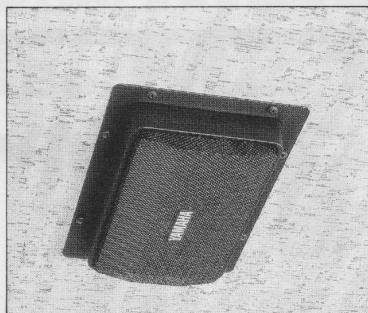
**OT-1800**  
Output Transformer for  
PM1800

**Security Covers**

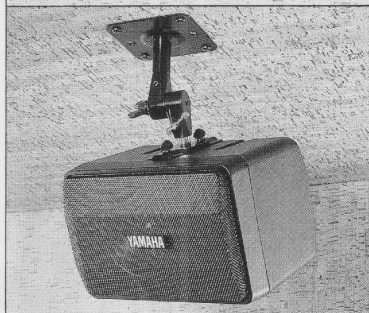
**SC2031**  
Security Cover for Q2031A

**SC-DEQ7**  
Security Cover for DEQ7

## S10X/20X Accessories



**BCS-10**  
Ceiling Bracket



**BWS-10**  
Wall Mounting Bracket



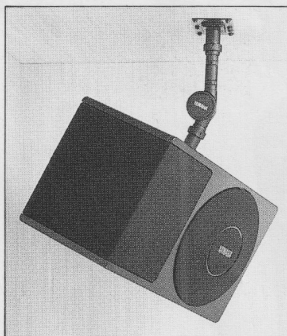
**BAS-10**  
Free Angle Clamp



**BMS-10**  
Mic Stand Adaptor (AKG type)

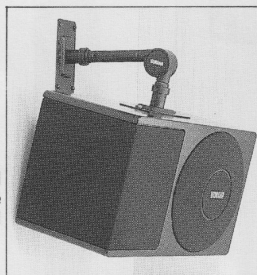
**BMS-10S**  
Mic Stand Adaptor (Shure type)

## S50X Accessories

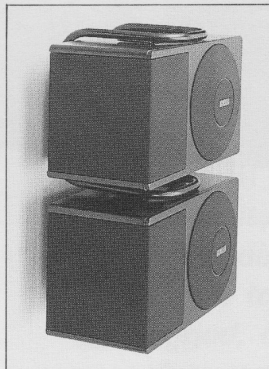


**BWS-50-190**  
**BWS-50-260**  
**BWS-50-320**  
Ceiling Bracket

BWS-50-260 and -320 can also be used for wall mounting.



**BSS-50**  
Stacking Bracket



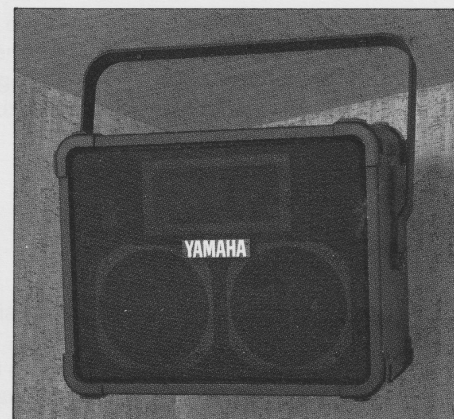
**STS-50**  
Speaker Stand



## S250X Accessories



**BFS-250**  
Foldback Adaptor



**BCS-250**  
Ceiling Bracket

**BWS-250**  
Wall Mounting Bracket



**BSS-250**  
Stacking Support Adaptor



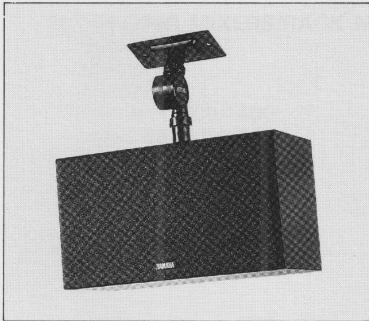


**MS101/MS202 Accessories**

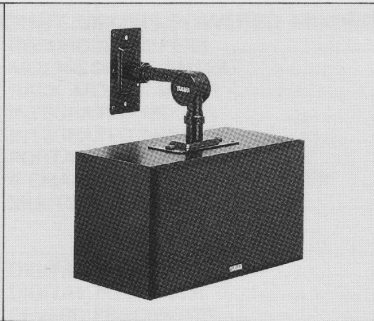
**STS10**  
Speaker Stand



**STS2**  
Speaker Stand

**NS10MC Accessories**

**BWS50-190**  
Ceiling Bracket



**BWS50-320**  
Ceiling/Wall Bracket



**STS-50**  
Speaker Stand

PROFESSIONAL MICROPHONES  
MIXING CONSOLES  
RECORDING MIXERS  
RACK MOUNT MIXERS  
PORTABLE KEYBOARD MIXERS  
MIXING AMPLIFIER  
POWERED MIXERS  
DIGITAL MIXING PROCESSOR  
SIGNAL PROCESSORS  
RECORDING EQUIPMENT  
POWER AMPLIFIERS  
SPEAKER SYSTEMS

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